ABRITES Diagnostic for Ford/Mazda

User Manual

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Overview

ABRITES Commander for Ford/Mazda is a professional software for diagnostic of Ford/Mazda vehicles.

Standard diagnostic functions:

- Read Vehicle Identification
- Read Fault Codes (DTC)
- Clear Fault Codes
- Device Scan
- Data Display / Measured values
- Diesel Engine Injectors Programming
- Programmable Module Installation
- Service Functions

Special functions:

- Read/Write EEPROM
- Mileage Recalibration
- Key Learning

Advanced functions:

- Custom Request
- Dump Tool

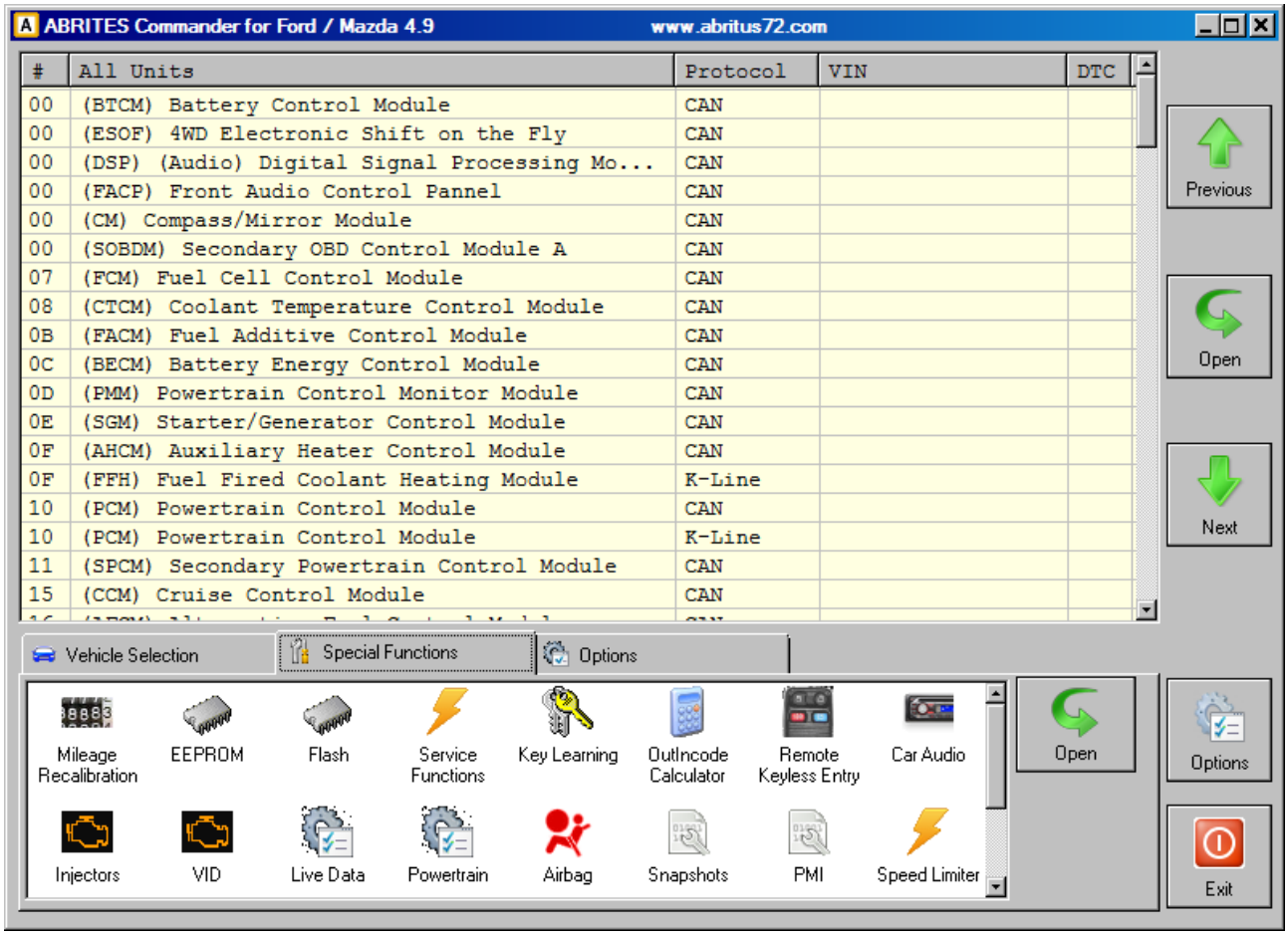
Supported protocols:

- High Speed CAN – 500kb, 6-14
- Mid Speed CAN – 125kb, 3-11
- K – line 7
- J1850 PWM – 2-10 (requires additional adapter)

Note: Depending on the purchased version some of these functions may not be available in your software.

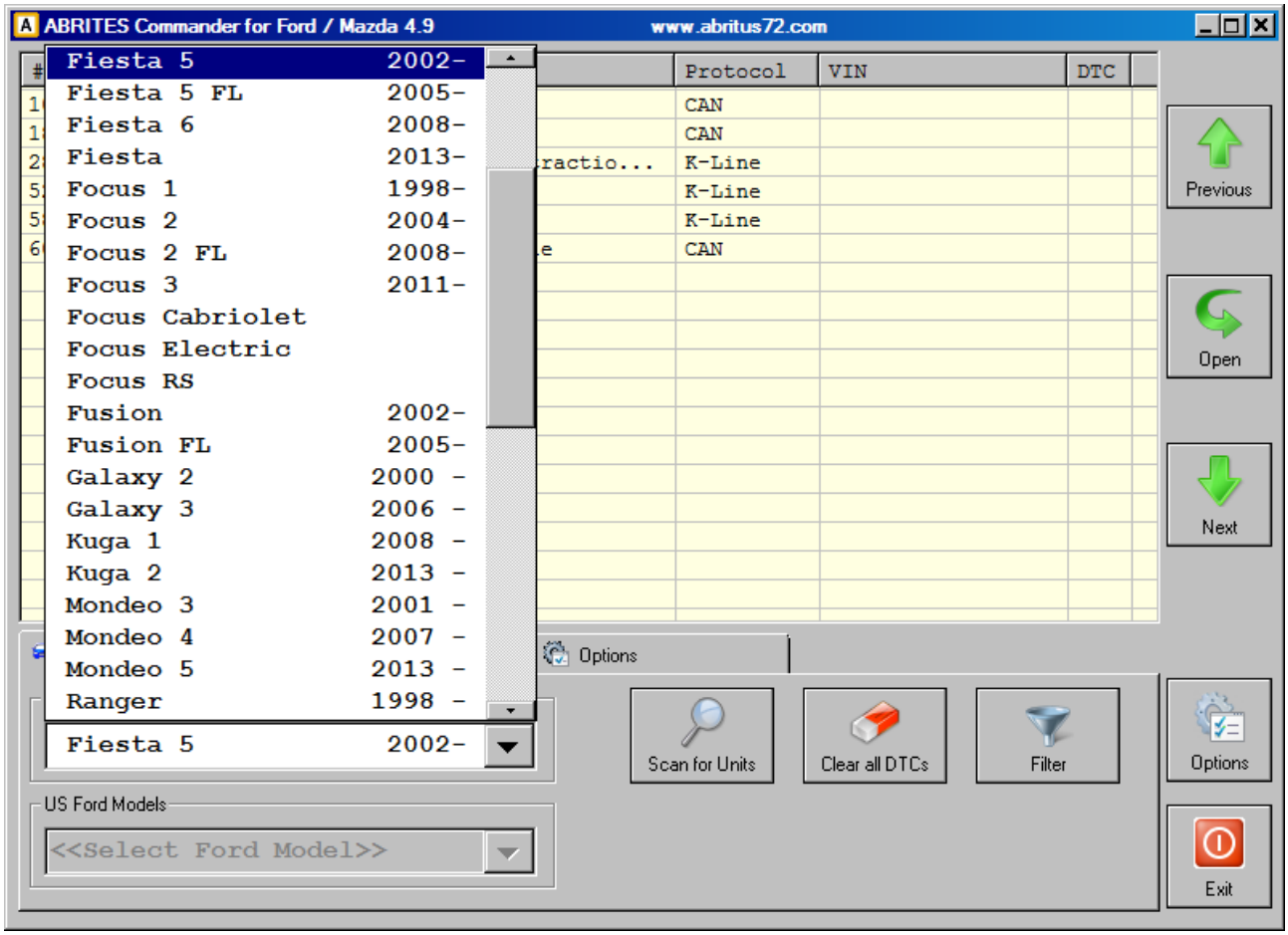
Getting Started

When you run ABRITES Commander for Ford/Mazda it will try to detect automatically the appropriate hardware interface and will connect with it. If the connection failed a message box with the explanation of the problem will appear.



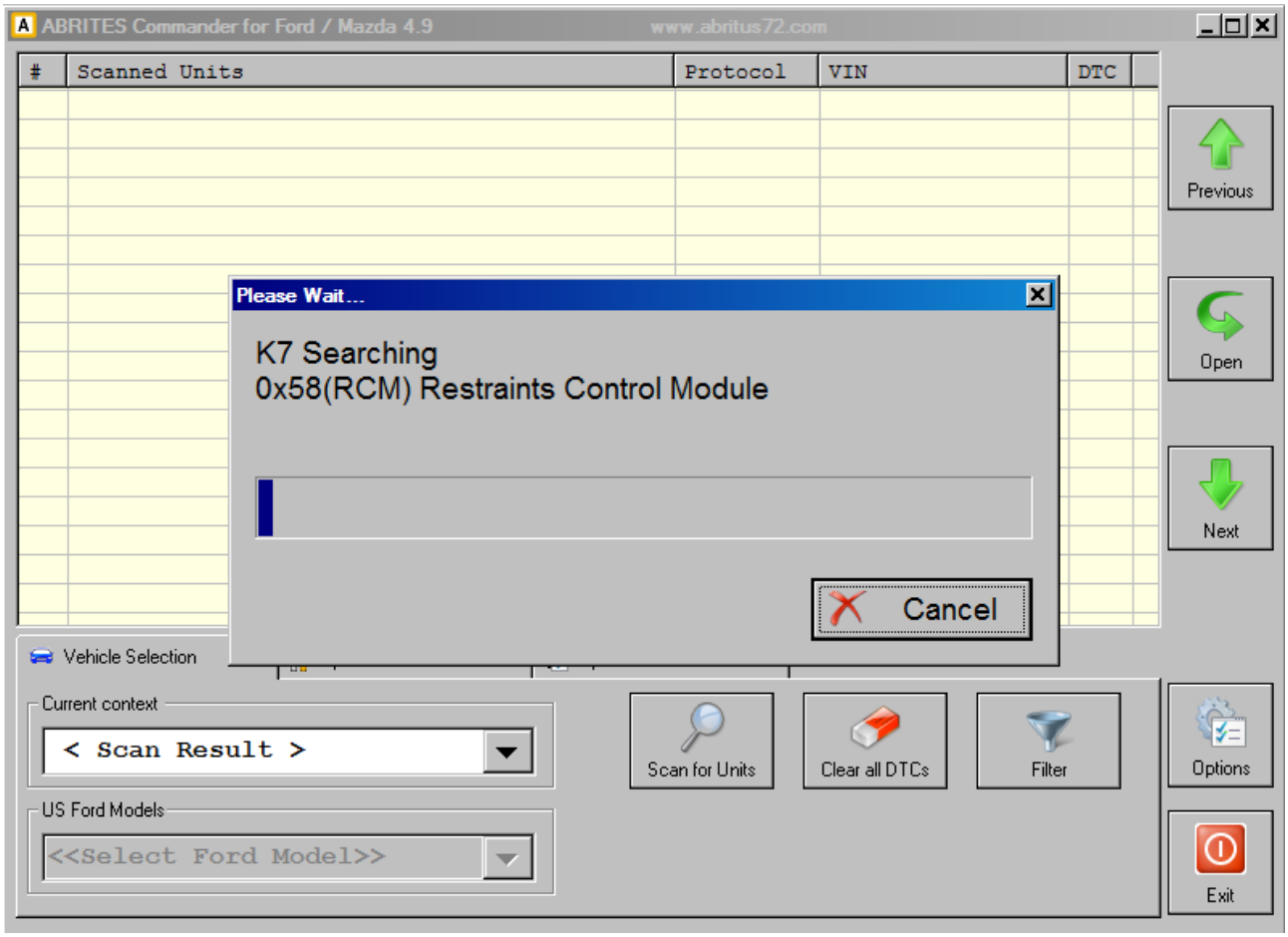
Vehicle Context

By default, when ABRITES Commander for Ford/Mazda is started in the main list are displayed all available electronic contrl units. You can reduce the number of displayed units by specifying the vehicle context. To change the vehicle context select a desired model.



Scanning for ECUs

Device scanning function is helpful when you want to perform a quick DTC check of all available device units in a vehicle. When you click on the "Scan all" button on the main screen, a progress window will appear. The bahaviour of the scanning can be chaned by the "Device Scanning" option. Refer to the Configuration section.



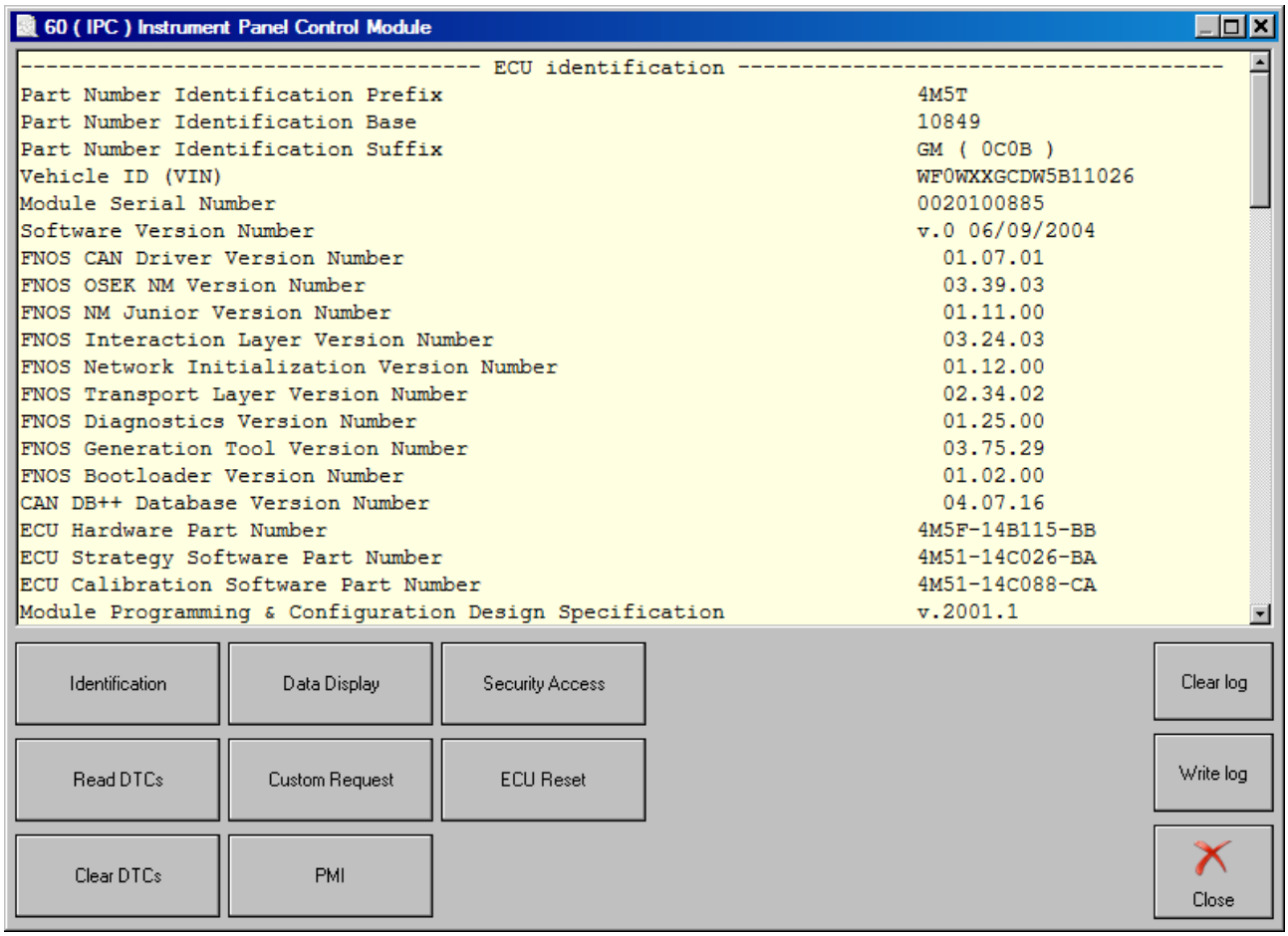
Options

Diagnostic

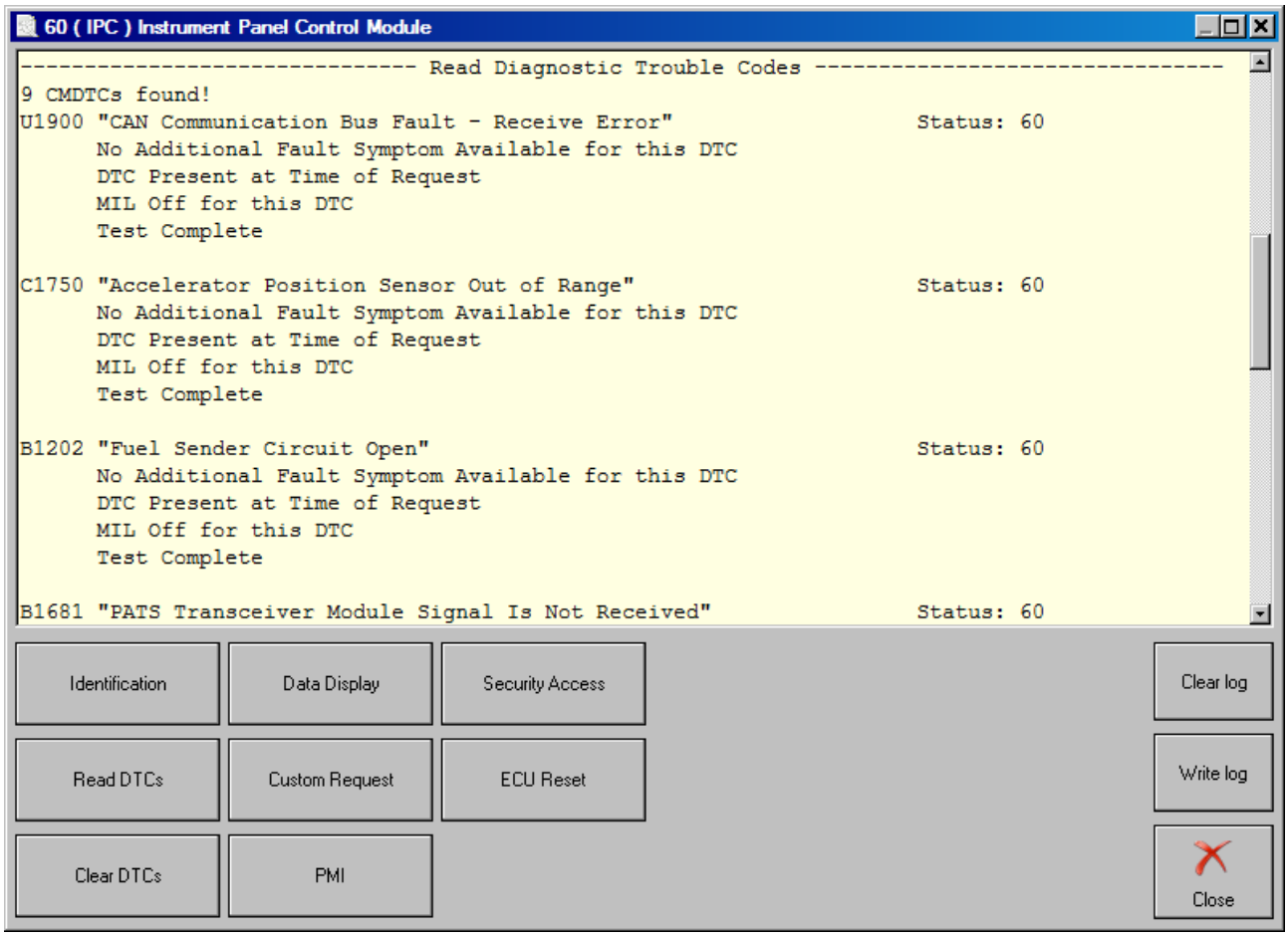
ECU identification

With this function hardware and software variant, calibration level can be seen.

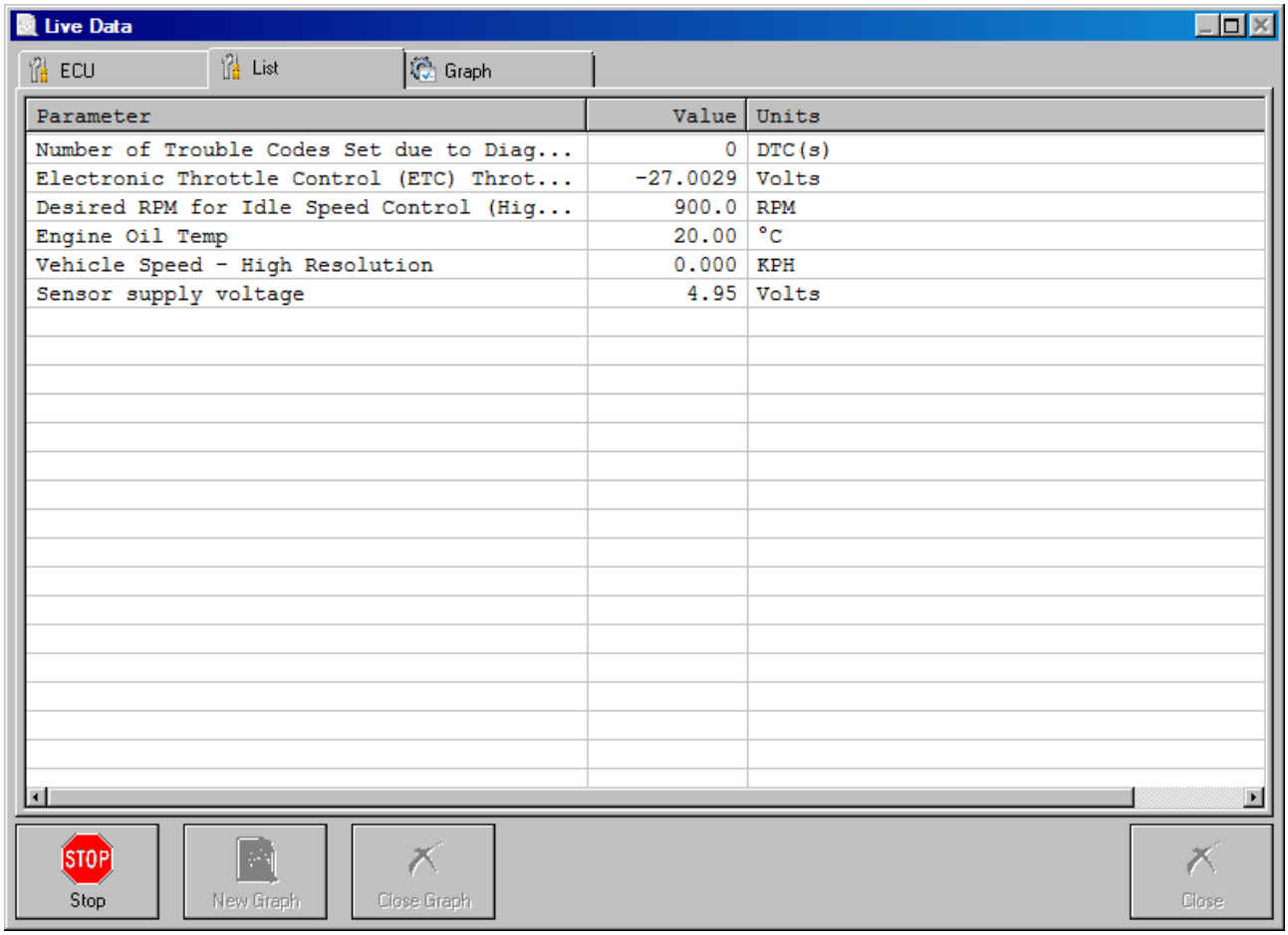
This information is useful when an used ECU is needed to replace damaged original part.


60 (IPC) Instrument Panel Control Module
---------- ECU identification ----------
Part Number Identification Prefix 4M5T
Part Number Identification Base 10849
Part Number Identification Suffix GM (0C0B)
Vehicle ID (VIN) WF0WXXGCDW5B11026
Module Serial Number 0020100885
Software Version Number v.0 06/09/2004
FNOS CAN Driver Version Number 01.07.01
FNOS OSEK NM Version Number 03.39.03
FNOS NM Junior Version Number 01.11.00
FNOS Interaction Layer Version Number 03.24.03
FNOS Network Initialization Version Number 01.12.00
FNOS Transport Layer Version Number 02.34.02
FNOS Diagnostics Version Number 01.25.00
FNOS Generation Tool Version Number 03.75.29
FNOS Bootloader Version Number 01.02.00
CAN DB++ Database Version Number 04.07.16
ECU Hardware Part Number 4M5F-14B115-BB
ECU Strategy Software Part Number 4M51-14C026-BA
ECU Calibration Software Part Number 4M51-14C088-CA
Module Programming & Configuration Design Specification v.2001.1
Identification
Data Display
Security Access
Clear log
Read DTCs
Custom Request
ECU Reset
Write log
Clear DTCs
PMI
Close

Read / Clear DTC


60 (IPC) Instrument Panel Control Module
---------- Read Diagnostic Trouble Codes ----------
9 CMDTCs found!
U1900 "CAN Communication Bus Fault - Receive Error" Status: 60
No Additional Fault Symptom Available for this DTC
DTC Present at Time of Request
MIL Off for this DTC
Test Complete
C1750 "Accelerator Position Sensor Out of Range" Status: 60
No Additional Fault Symptom Available for this DTC
DTC Present at Time of Request
MIL Off for this DTC
Test Complete
B1202 "Fuel Sender Circuit Open" Status: 60
No Additional Fault Symptom Available for this DTC
DTC Present at Time of Request
MIL Off for this DTC
Test Complete
B1681 "PATS Transceiver Module Signal Is Not Received" Status: 60
Identification
Data Display
Security Access
Clear log
Read DTCs
Custom Request
ECU Reset
Write log
Clear DTCs
PMI
Close

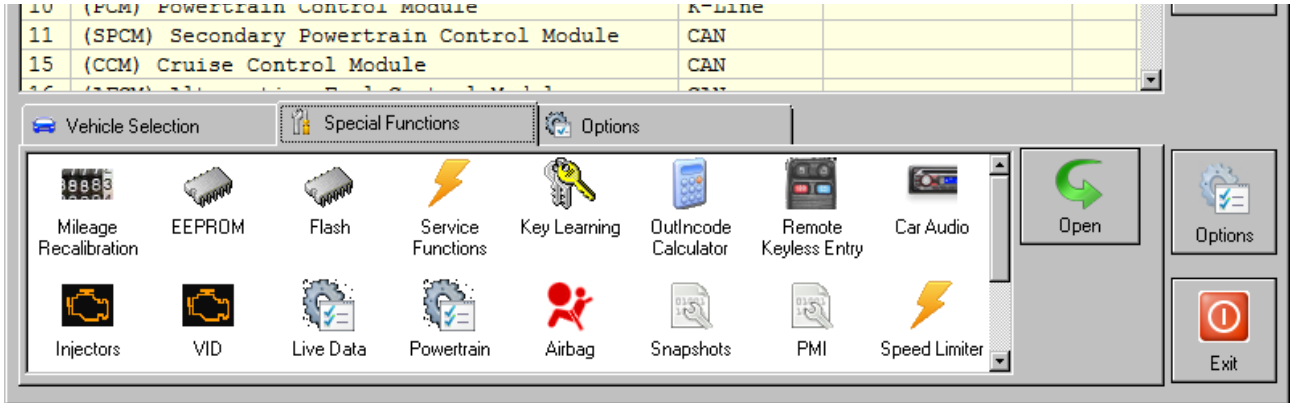
Live Data


Live Data
ECU
List
Graph
Parameter
Value
Units
Number of Trouble Codes Set due to Diag... 0 DTC(s)
Electronic Throttle Control (ETC) Throt... -27.0029 Volts
Desired RPM for Idle Speed Control (Hig... 900.0 RPM
Engine Oil Temp 20.00 °C
Vehicle Speed - High Resolution 0.000 KPH
Sensor supply voltage 4.95 Volts
Stop
New Graph
Close Graph
Close

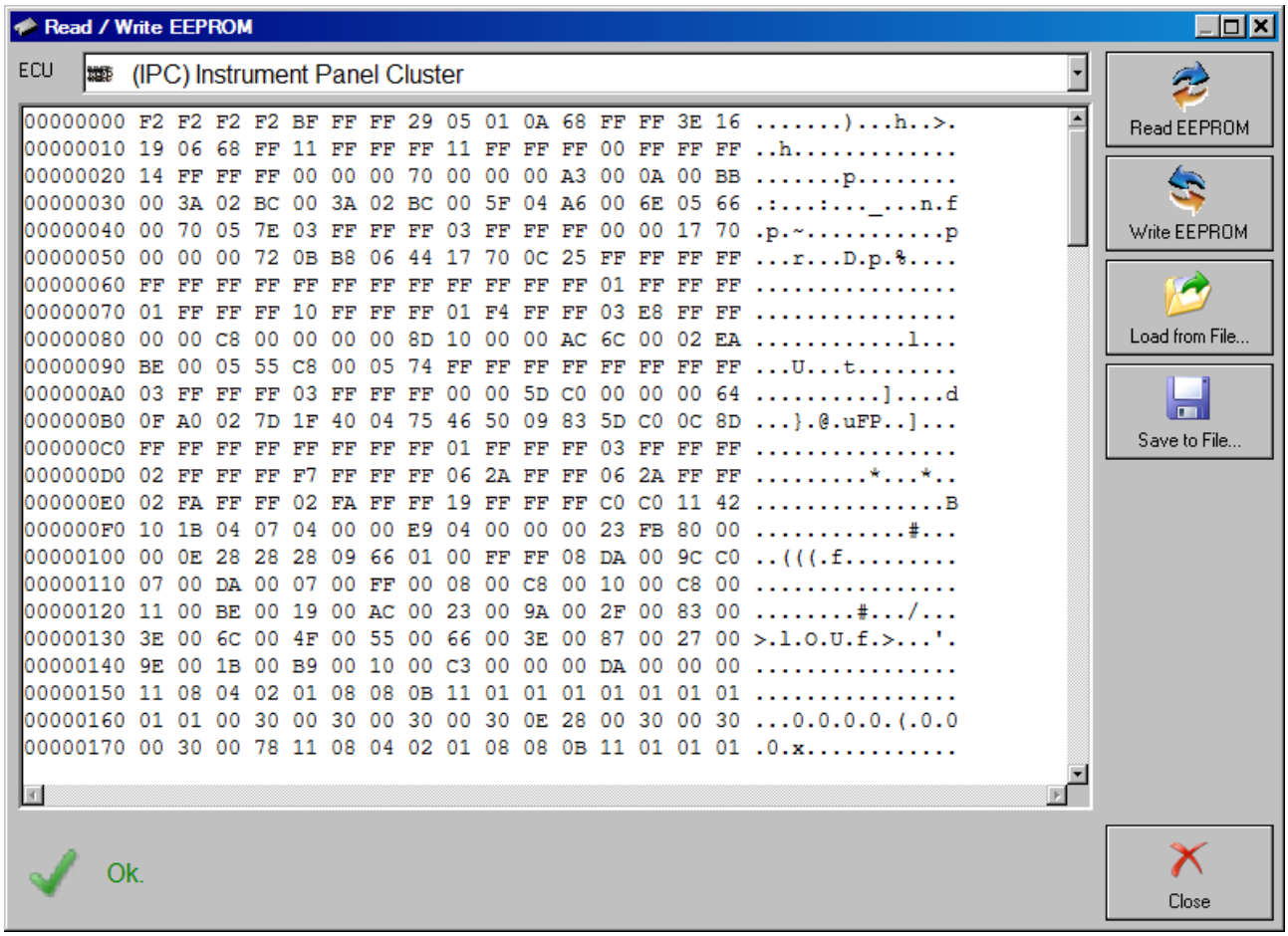
Special Functions

ABRITES Commander for Ford/Mazda provide some diagnostic functions, which are specific only to our product or they are not supported by the other similar diagnostic tools. These functions are separated in the Special Functions list.

The list is located in the bottom right corner of the main screen. You can run a special function by double clicking on it or by selecting it and clicking on the button Open in the right of the list.

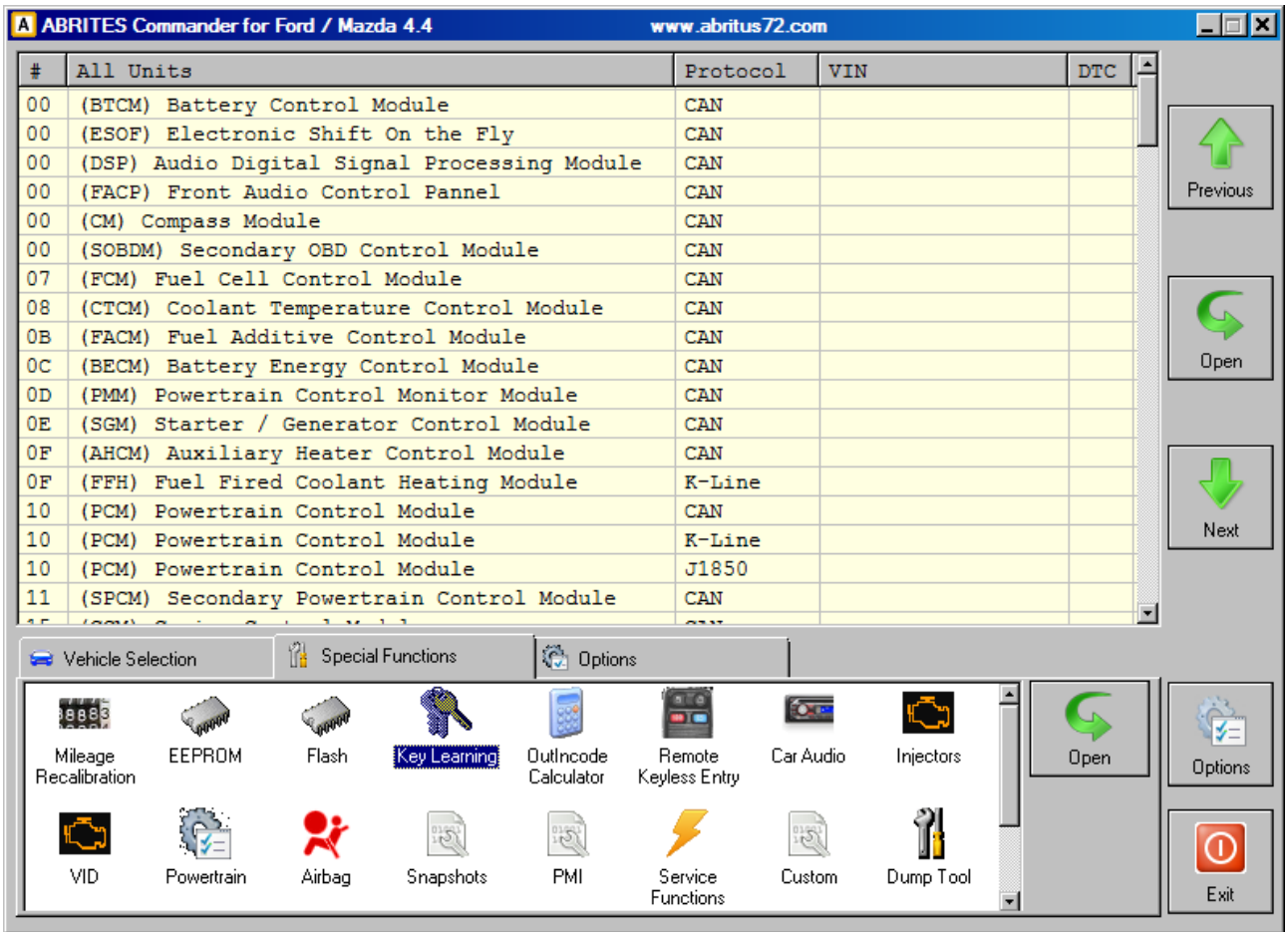


Memory Read / Write

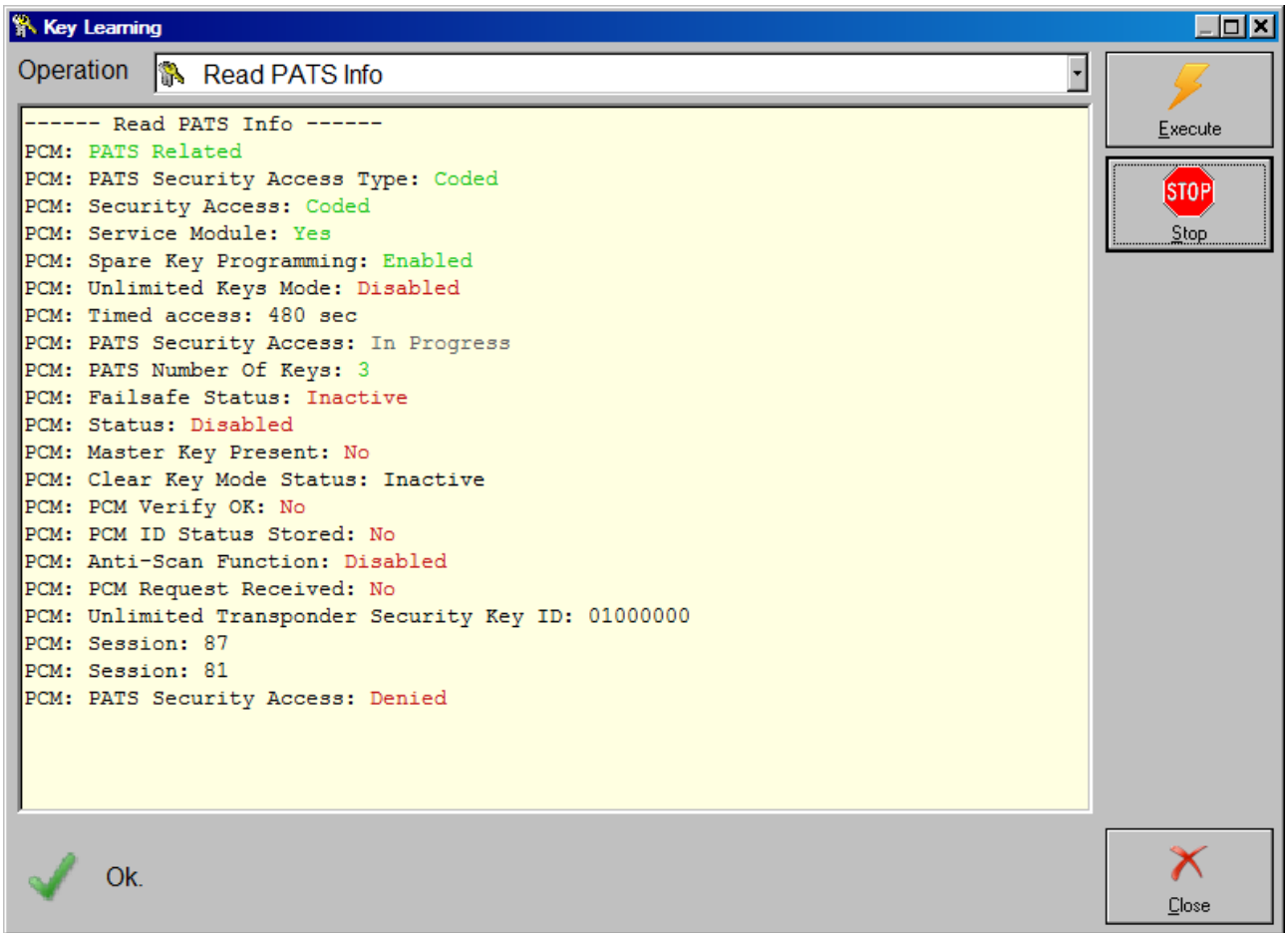

Read / Write EEPROM
ECU
(IPC) Instrument Panel Cluster
00000000 F2 F2 F2 F2 BF FF FF 29 05 01 0A 68 FF FF 3E 16 ....)...h..>.
00000010 19 06 68 FF 11 FF FF FF 11 FF FF FF 00 FF FF FF ..h.............
00000020 14 FF FF FF 00 00 00 70 00 00 00 A3 00 0A 00 BB ....p........
00000030 00 3A 02 BC 00 3A 02 BC 00 5F 04 A6 00 6E 05 66 .:...:..._...n.f
00000040 00 70 05 7E 03 FF FF FF 03 FF FF FF 00 00 17 70 .p.~...........p
00000050 00 00 00 72 0B B8 06 44 17 70 0C 25 FF FF FF FF ...r...D.p.%....
00000060 FF FF FF FF FF FF FF FF FF FF FF FF 01 FF FF FF ....
00000070 01 FF FF FF 10 FF FF FF 01 F4 FF FF 03 E8 FF FF ....
00000080 00 00 C8 00 00 00 00 8D 10 00 00 AC 6C 00 02 EA ....l...
00000090 BE 00 05 55 C8 00 05 74 FF FF FF FF FF FF FF FF ...U...t........
000000A0 03 FF FF FF 03 FF FF FF 00 00 5D C0 00 00 00 64 ....]....d
000000B0 0F A0 02 7D 1F 40 04 75 46 50 09 83 5D C0 0C 8D ...}.@.uFP..]...
000000C0 FF FF FF FF FF FF FF FF 01 FF FF FF 03 FF FF FF ....
000000D0 02 FF FF FF F7 FF FF FF 06 2A FF FF 06 2A FF FF .........*...*..
000000E0 02 FA FF FF 02 FA FF FF 19 FF FF FF C0 C0 11 42 ....B
000000F0 10 1B 04 07 04 00 00 E9 04 00 00 00 23 FB 80 00 ....#...
00000100 00 0E 28 28 28 09 66 01 00 FF FF 08 DA 00 9C C0 ..(((.f.........
00000110 07 00 DA 00 07 00 FF 00 08 00 C8 00 10 00 C8 00 ....
00000120 11 00 BE 00 19 00 AC 00 23 00 9A 00 2F 00 83 00 ....#.../...
00000130 3E 00 6C 00 4F 00 55 00 66 00 3E 00 87 00 27 00 >.l.O.U.f.>...'.
00000140 9E 00 1B 00 B9 00 10 00 C3 00 00 00 DA 00 00 00 ....
00000150 11 08 04 02 01 08 08 0B 11 01 01 01 01 01 01 01 ....
00000160 01 01 00 30 00 30 00 30 00 30 0E 28 00 30 00 30 ...0.0.0.0.(.0.0
00000170 00 30 00 78 11 08 04 02 01 08 08 0B 11 01 01 01 .0.x............
Read EEPROM
Write EEPROM
Load from File...
Save to File...
Ok.
Close

Key Learning

Go to the Special Functions screen. Select Key Learning.

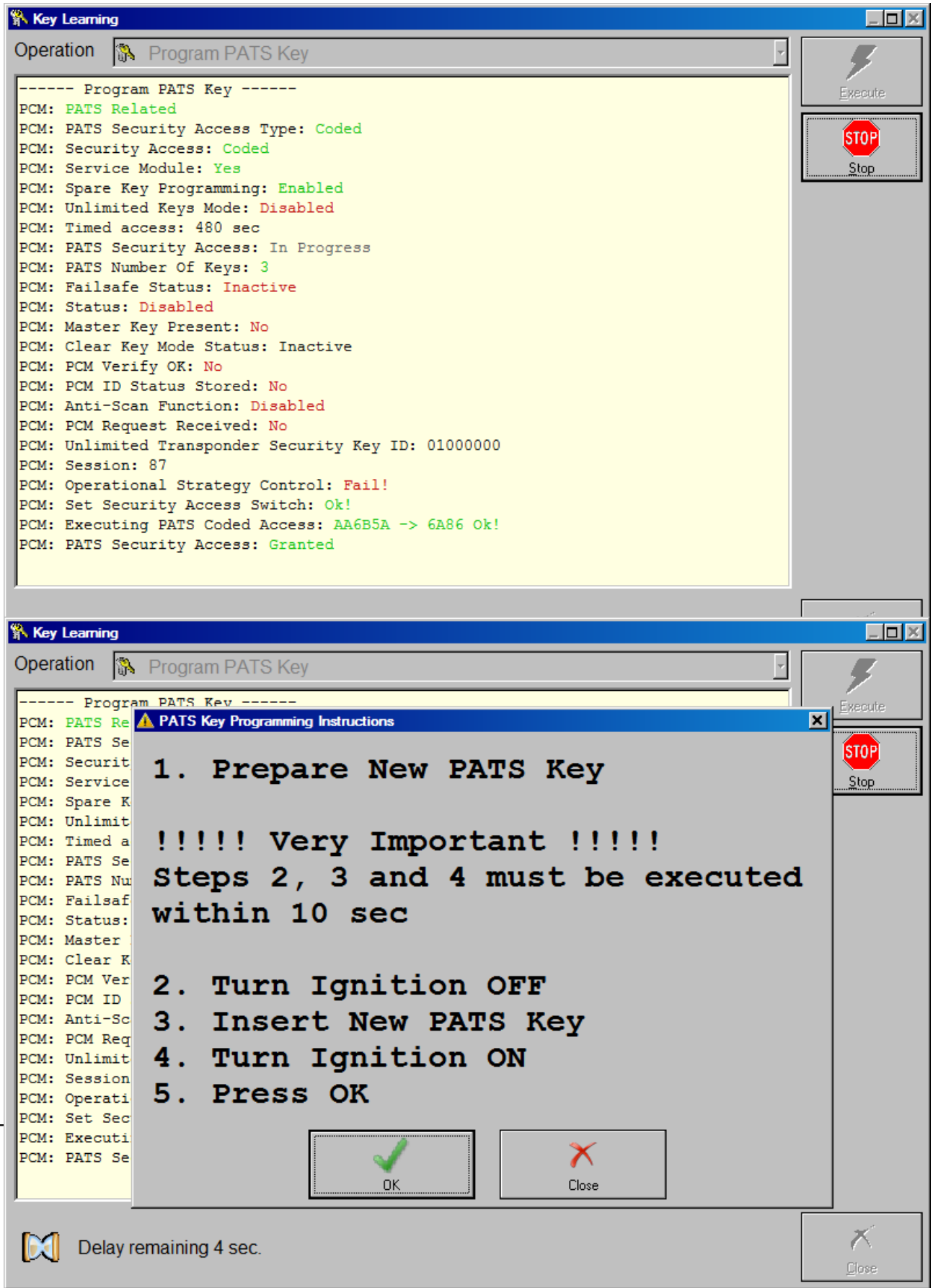


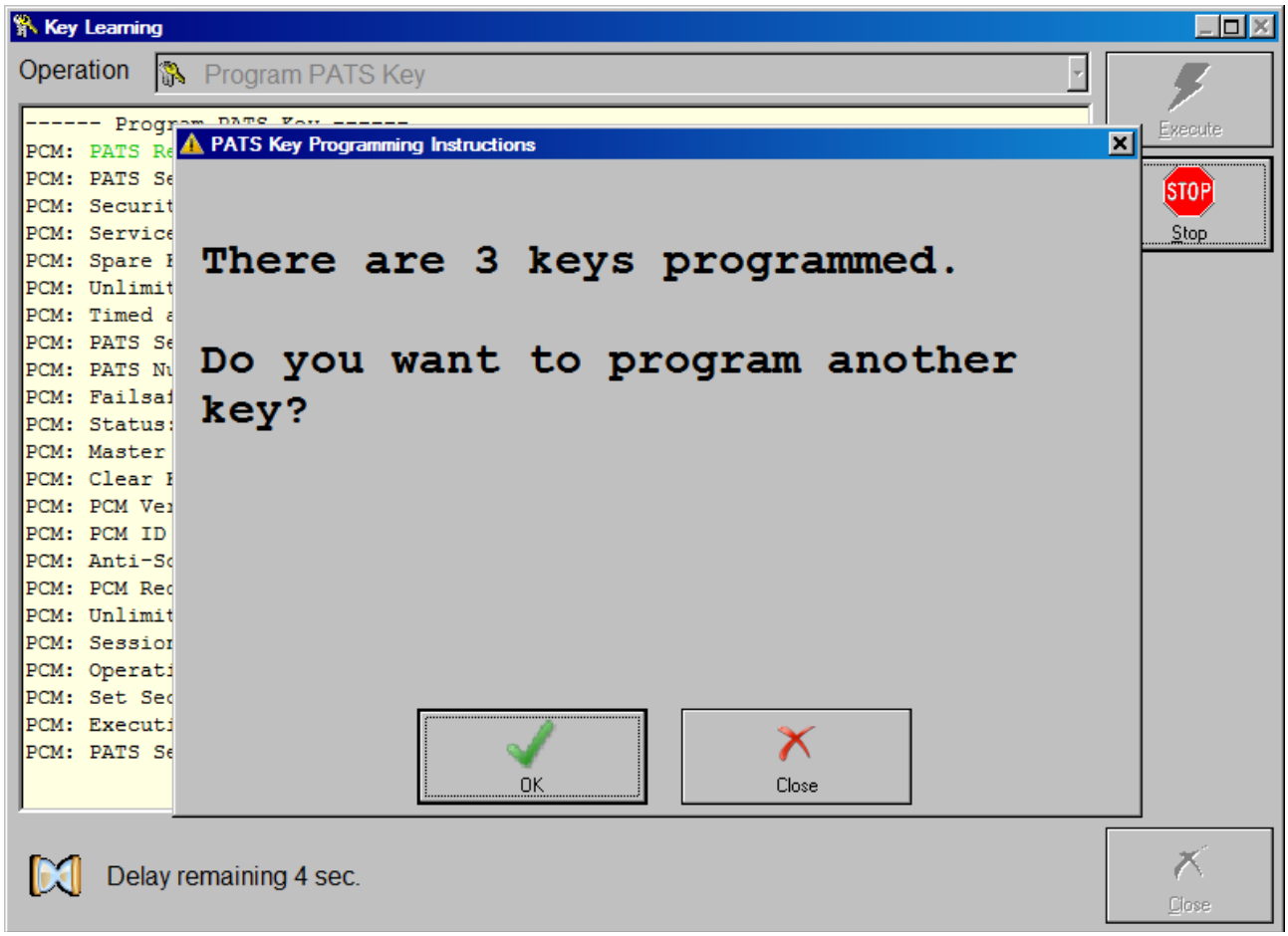
PATS Information



PATS Key Learning

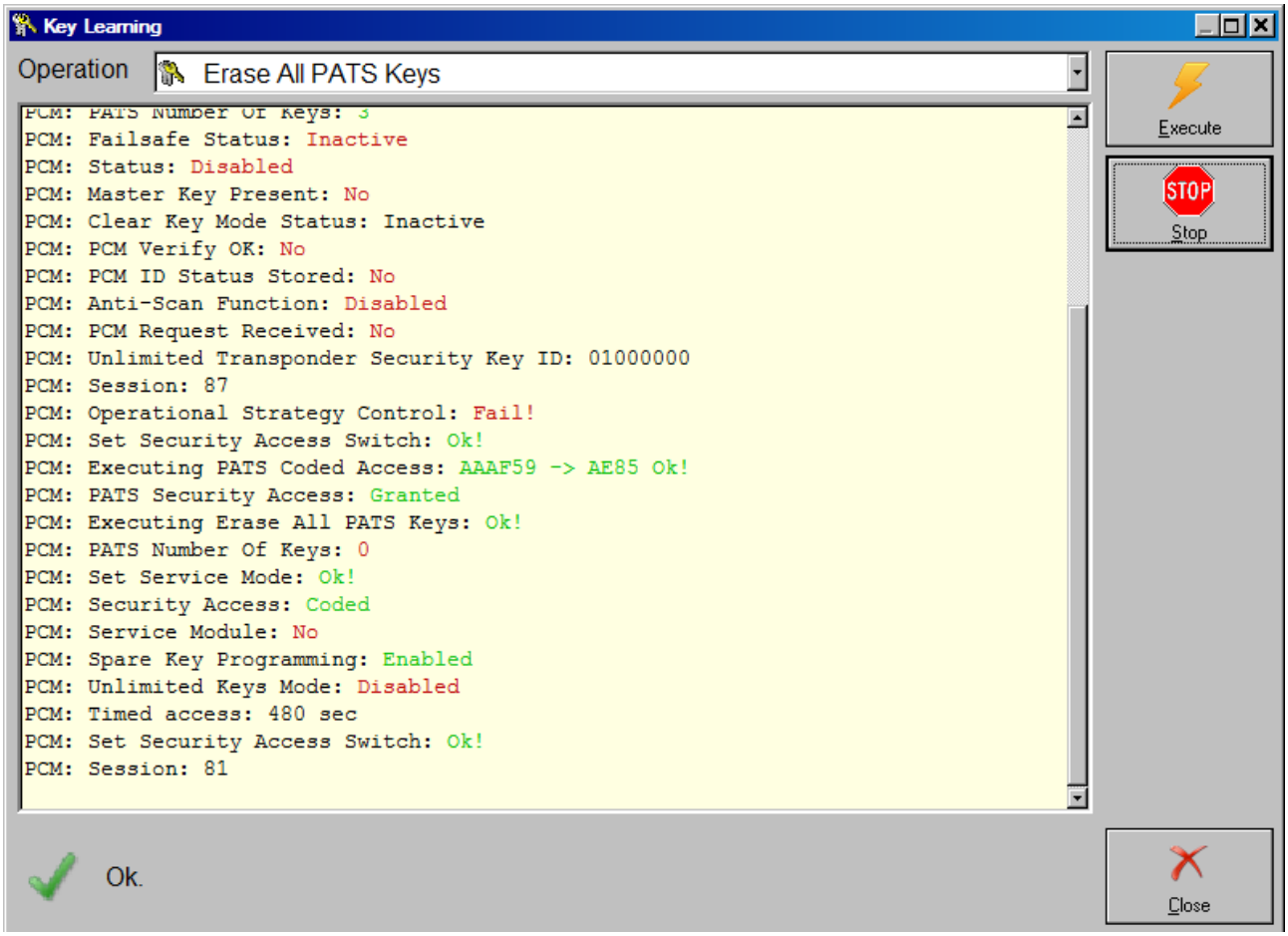
This procedure will add keys to the PATS system memory.
Keys already known to the PATS system will not be erased.




Key Learning
Operation
Program PATS Key
Execute
Stop
PATS Key Programming Instructions
There are 3 keys programmed.
Do you want to program another key?
OK
Close
Delay remaining 4 sec.
Close

PATS Erase All Keys

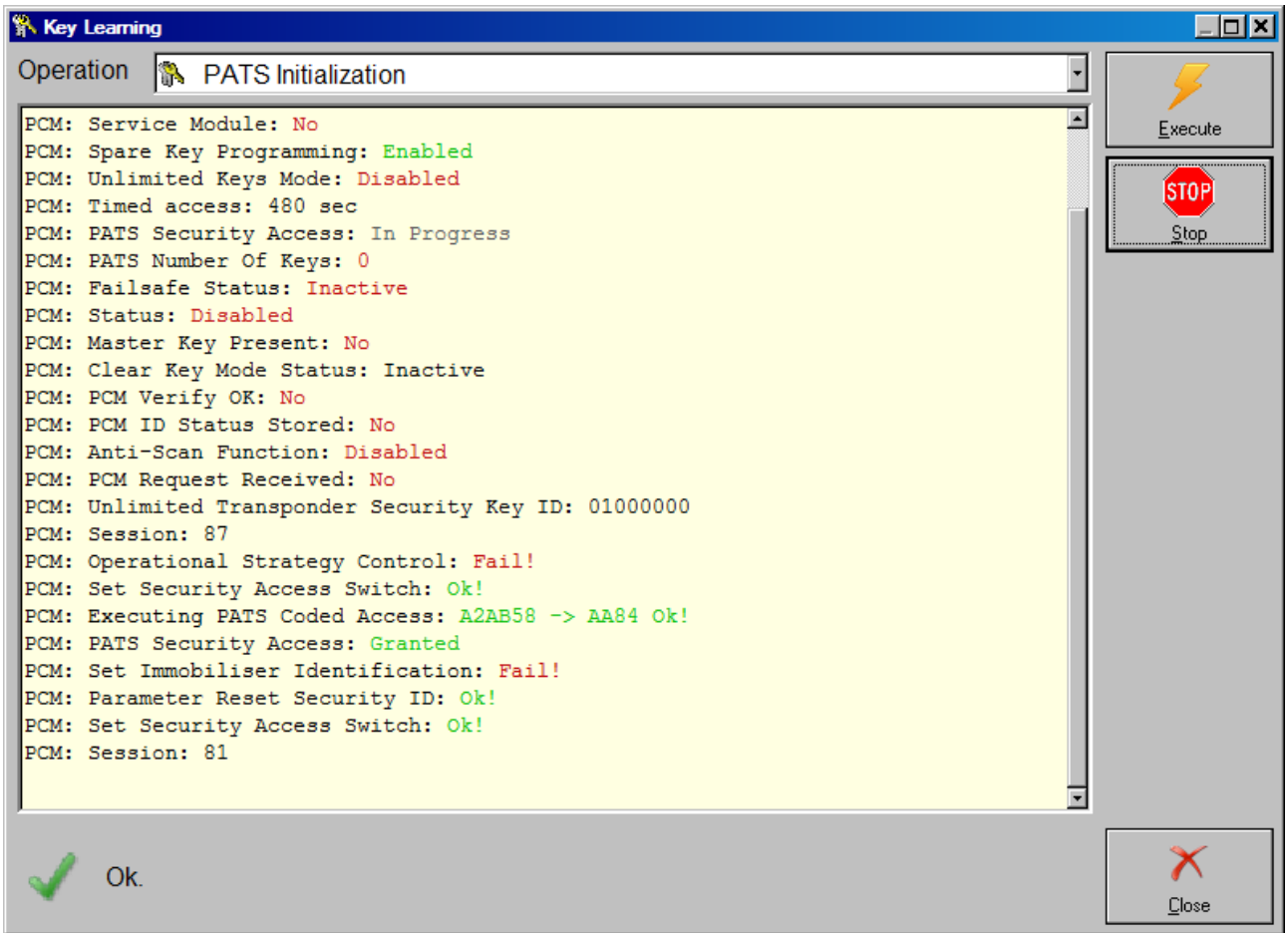
This procedure will erased all stored keys from the PATS system memory.
Once completed a minimum of 2 new keys must be programmed,


Key Learning
Operation
Erase All PATS Keys
PCM: PATS Number Of Keys: 3
PCM: Failsafe Status: Inactive
PCM: Status: Disabled
PCM: Master Key Present: No
PCM: Clear Key Mode Status: Inactive
PCM: PCM Verify OK: No
PCM: PCM ID Status Stored: No
PCM: Anti-Scan Function: Disabled
PCM: PCM Request Received: No
PCM: Unlimited Transponder Security Key ID: 01000000
PCM: Session: 87
PCM: Operational Strategy Control: Fail!
PCM: Set Security Access Switch: Ok!
PCM: Executing PATS Coded Access: AAAF59 -> AE85 Ok!
PCM: PATS Security Access: Granted
PCM: Executing Erase All PATS Keys: Ok!
PCM: PATS Number Of Keys: 0
PCM: Set Service Mode: Ok!
PCM: Security Access: Coded
PCM: Service Module: No
PCM: Spare Key Programming: Enabled
PCM: Unlimited Keys Mode: Disabled
PCM: Timed access: 480 sec
PCM: Set Security Access Switch: Ok!
PCM: Session: 81
Execute
STOP
Stop
Ok.
Close

PATS Initialization

This procedure is used to match the PCM to IPC (HEC) and/or BCM or FIP as appropriate. It is important that the key in the ignition is programmed to the vehicle, otherwise module initialization is not possible.

PCM - Powertrain Control Module
HEC - Hybrid Electrical Cluster (instrument cluster)
FIP - Fuel Injection Pump


Key Learning
Operation
PATS Initialization
PCM: Service Module: No
PCM: Spare Key Programming: Enabled
PCM: Unlimited Keys Mode: Disabled
PCM: Timed access: 480 sec
PCM: PATS Security Access: In Progress
PCM: PATS Number Of Keys: 0
PCM: Failsafe Status: Inactive
PCM: Status: Disabled
PCM: Master Key Present: No
PCM: Clear Key Mode Status: Inactive
PCM: PCM Verify OK: No
PCM: PCM ID Status Stored: No
PCM: Anti-Scan Function: Disabled
PCM: PCM Request Received: No
PCM: Unlimited Transponder Security Key ID: 01000000
PCM: Session: 87
PCM: Operational Strategy Control: Fail!
PCM: Set Security Access Switch: Ok!
PCM: Executing PATS Coded Access: A2AB58 -> AA84 Ok!
PCM: PATS Security Access: Granted
PCM: Set Immobiliser Identification: Fail!
PCM: Parameter Reset Security ID: Ok!
PCM: Set Security Access Switch: Ok!
PCM: Session: 81
Execute
STOP
Stop
Ok.
Close

Spare Key Programming Enable / Disable

Enables or disables the spare key programming procedure as listed in the Owners manual.

Unlimited Key Mode Enable / Disable

Unlimited key mode is intended for use by those customers who need more than 8 keys for their vehicle.

The unlimited key mode is set up by creating a special, unique unlimited transponder security key code and programming this key code into all of the vehicle keys so they contain the same key code.

The customer must choose an 8-digit number (except for 00000000 or 00000001) to be programmed into all of their vehicles keys (or, to all of the keys they want programmed to one vehicle). All customer vehicles keys (or all keys for one vehicle) need to use the same number. Valid digits are 0-9 and the letters A-F.

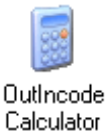
If the PID UNL_KEY_ID is not available, unlimited key mode is turned on, and must be turned off before viewing the stored code. At this time, unlimited keys may be programmed to the vehicle. To view/change the stored code, follow the procedure for disabling the unlimited key mode below.

Monitor the PID UNL_KEY_ID and compare its value against the code chosen in Step 1. It should not be the same key code.

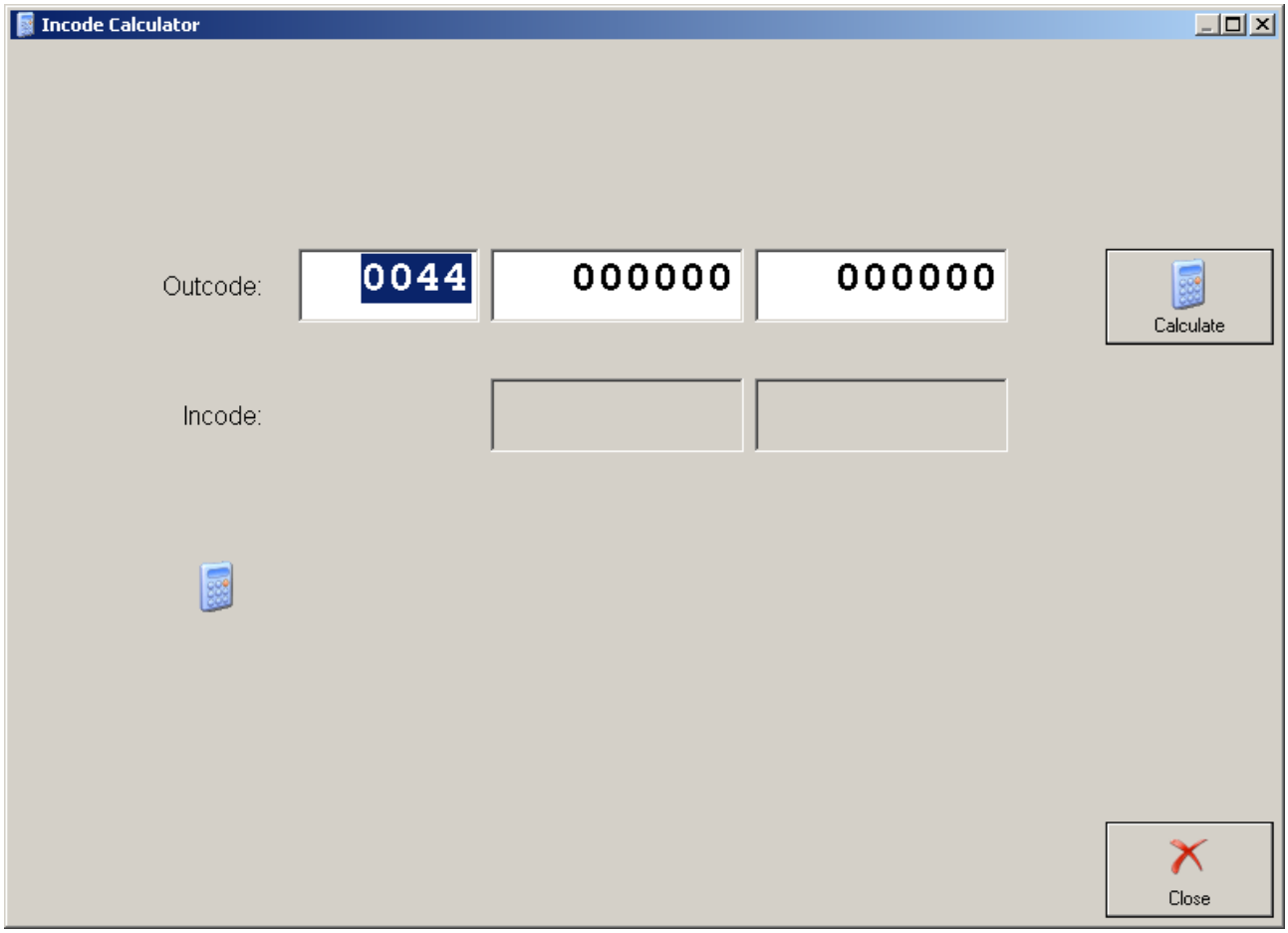
PATS OUT – IN code Calculator

The special function “PATS INcode Calculator” is commonly used together with Ford/Mazda IDS.

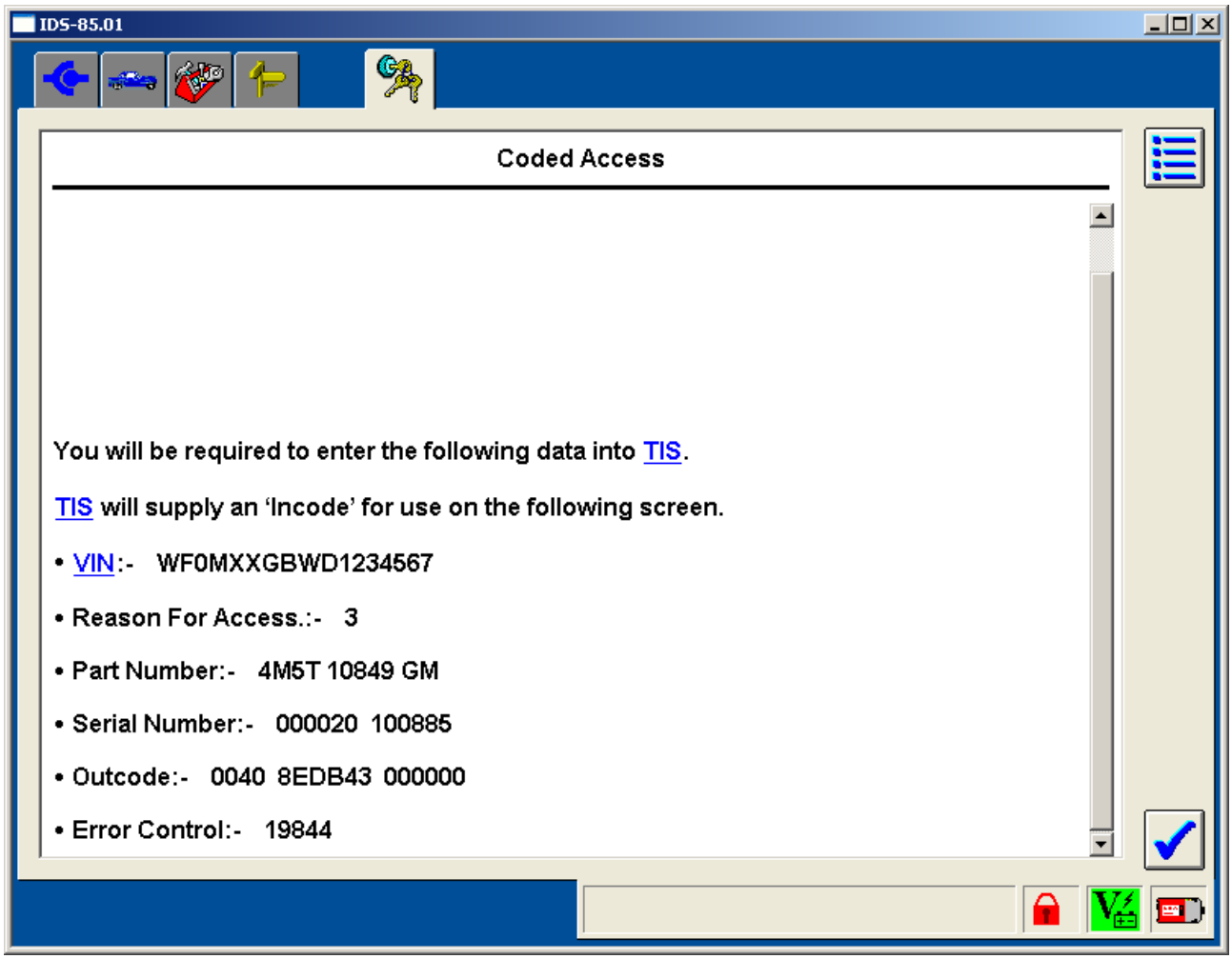
Open Special Functions list control and select OutIncode Calculator icon.



Following dialog appears on the display:



Start Ford IDS and connect to the car. Follow instructions and lets IDS read vehicle data. For example let you have this IDS screen.


IDS-85.01
Coded Access
You will be required to enter the following data into TIS.
TIS will supply an 'Incode' for use on the following screen.
• VIN:- WF0MXXGBWD1234567
• Reason For Access.:- 3
• Part Number:- 4M5T 10849 GM
• Serial Number:- 000020 100885
• Outcode:- 0040 8EDB43 000000
• Error Control:- 19844

The essential here is the line:

Outcode:- 0040 8EDB43 000000

This is "SINGLE" outcode.

It is used during key erasing or programming operation.

If ECU initialization is needed. IDS returns "DOUBLE" outcode:

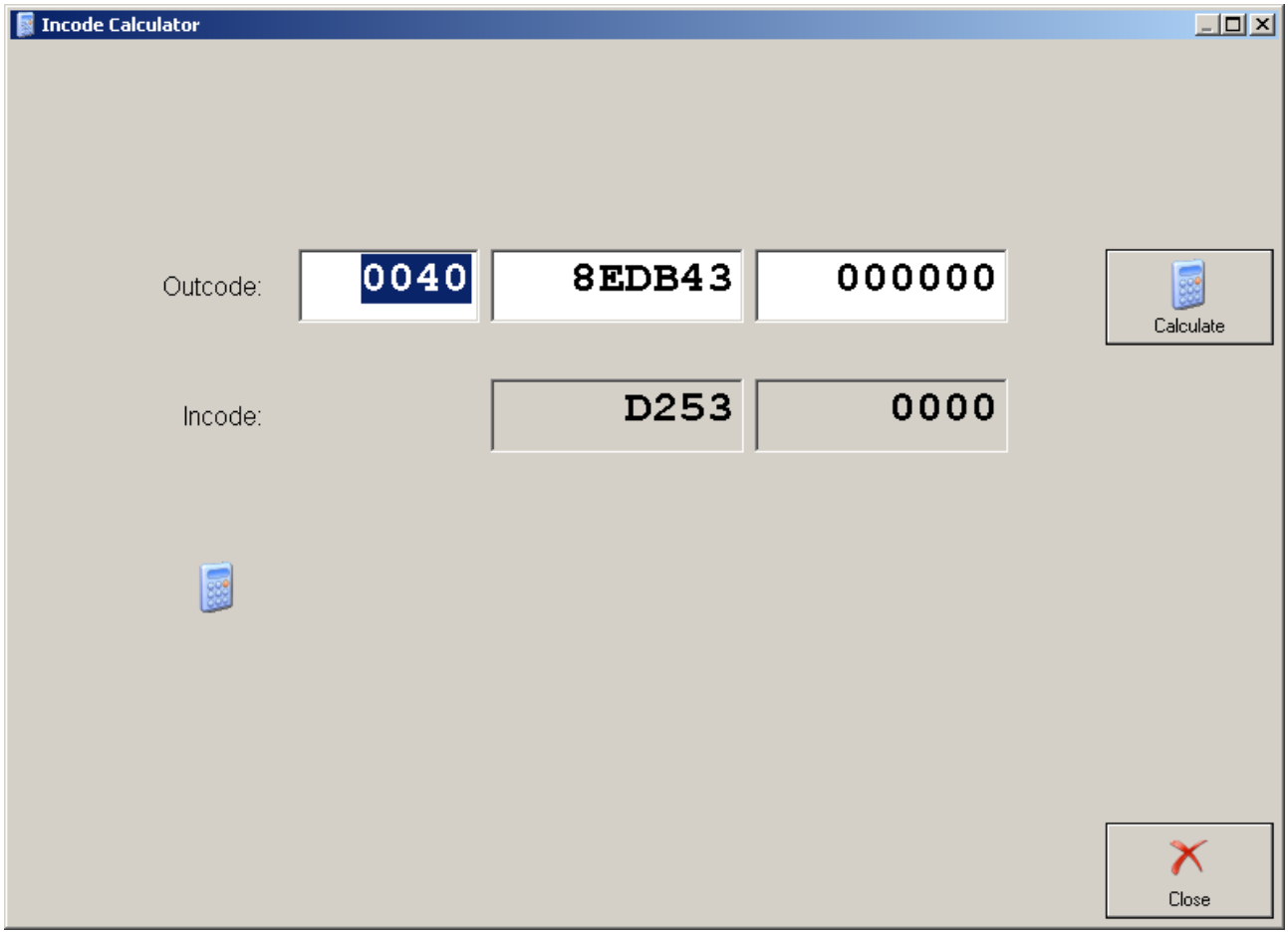
Outcode:- 0044 8EDB43 ABCDEF

Note that "SINGLE" outcode has xx40 in the first digits group, and "DOUBLE" outcode has xx44.

Be sure that you enter xx44 (PATS Outcode Prefix) as it is provided from IDS.

Enter digits from Outcode line in the three edit boxes and press button “Calculate”.

After a short time calculated INCode will appear in Incode edit box. Enter calculated value in IDS.



Vehicle Identification Data (VID) Block

VID block is a array of 128 bytes present in PCM (Powertrain Control Module) in most of Ford/Mazda models.

VID consists of are many configurable vehicle parameters:

VIN

Tyre Size

Axle Ratio

Anti-Lock Brake System

Auxiliary Cabin Heaters

Cooling Pack

Air Conditioning

Transmission

Body Type

Driveline

Speed Control

Generator

Vehicle Speed Output

Vehicle Type

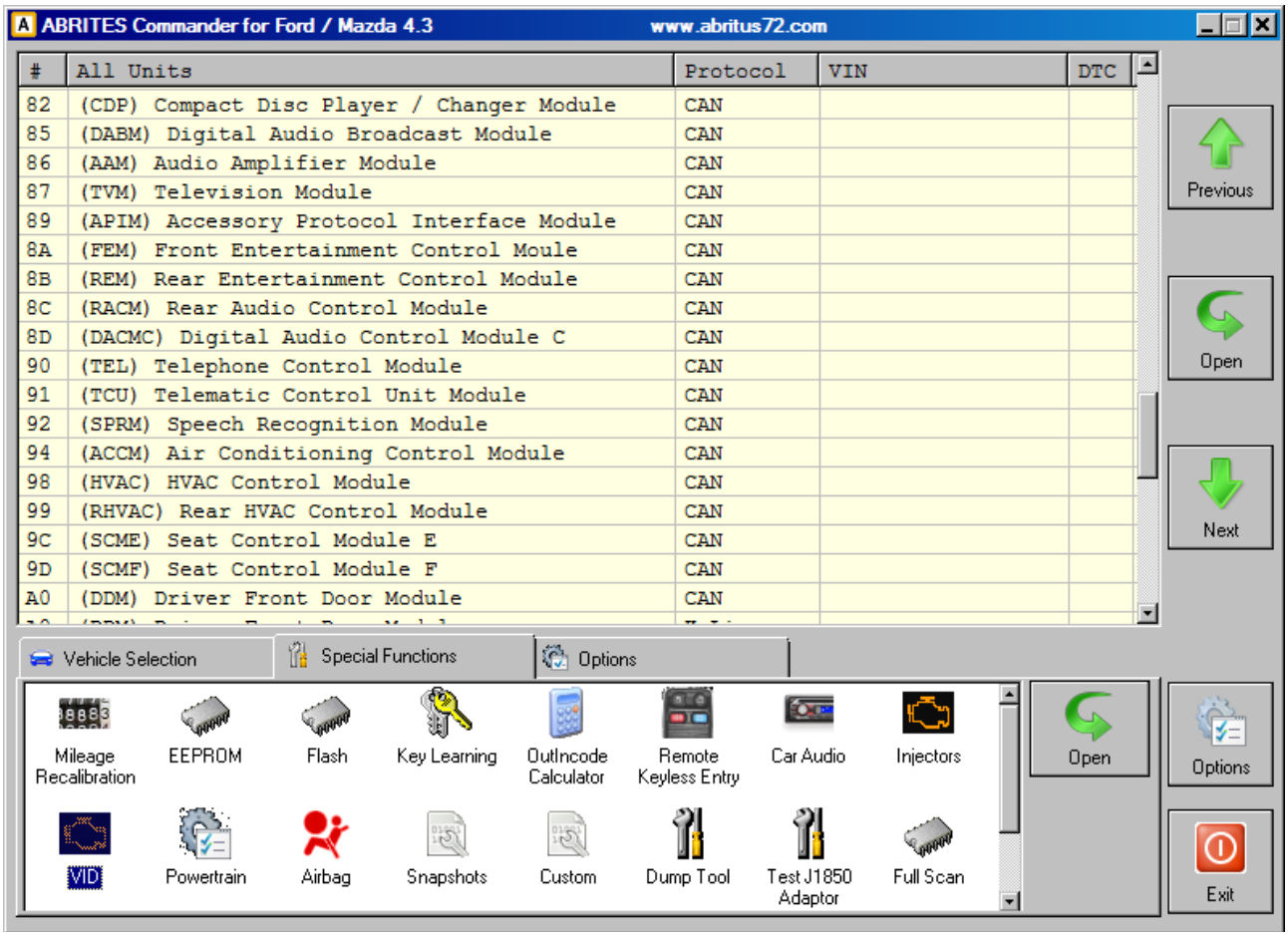
Fuel Type

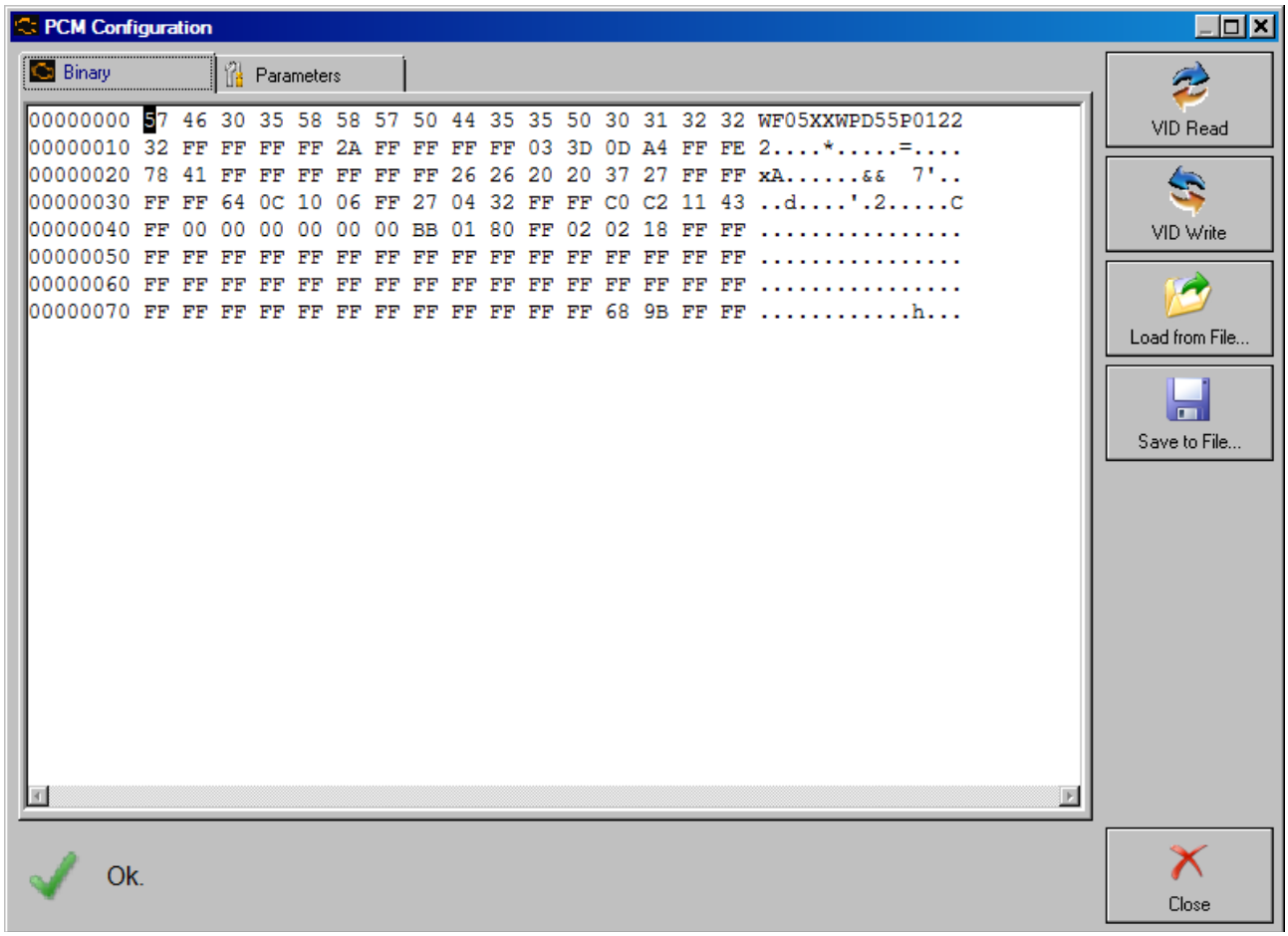
Octane Of Fuel

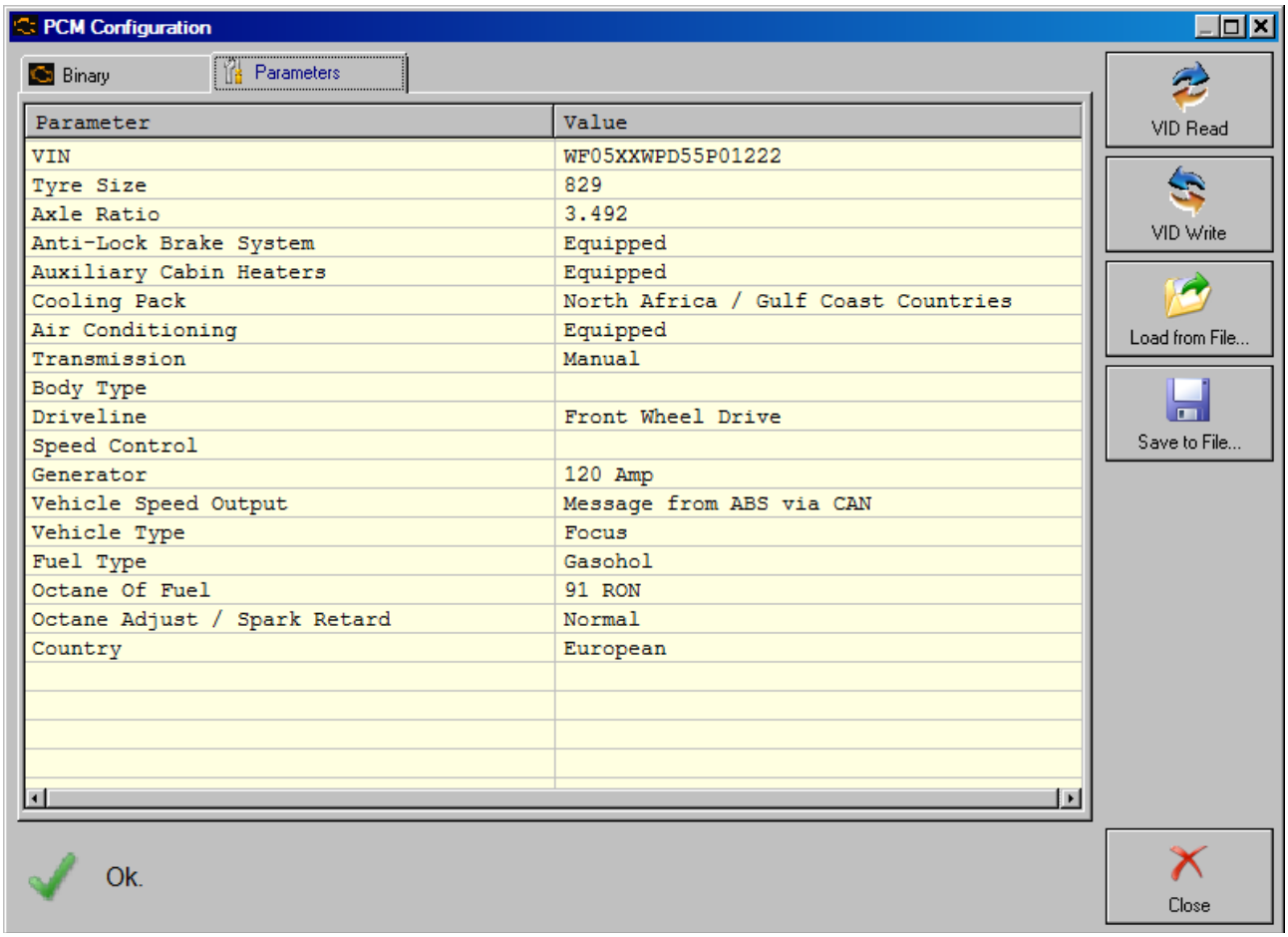
Octane Adjust / Spark Retard

Country

Go to the Special Functions screen. Select VID.


ABRITES Commander for Ford / Mazda 4.3
www.abritus72.com
All Units Protocol VIN DTC
82 (CDP) Compact Disc Player / Changer Module CAN
85 (DABM) Digital Audio Broadcast Module CAN
86 (AAM) Audio Amplifier Module CAN
87 (TVM) Television Module CAN
89 (APIM) Accessory Protocol Interface Module CAN
8A (FEM) Front Entertainment Control Moule CAN
8B (REM) Rear Entertainment Control Module CAN
8C (RACM) Rear Audio Control Module CAN
8D (DACMC) Digital Audio Control Module C CAN
90 (TEL) Telephone Control Module CAN
91 (TCU) Telematic Control Unit Module CAN
92 (SPRM) Speech Recognition Module CAN
94 (ACCM) Air Conditioning Control Module CAN
98 (HVAC) HVAC Control Module CAN
99 (RHVAC) Rear HVAC Control Module CAN
9C (SCME) Seat Control Module E CAN
9D (SCMF) Seat Control Module F CAN
A0 (DDM) Driver Front Door Module CAN
Previous
Open
Next
Vehicle Selection
Special Functions
Options
Mileage Recalibration
EEPROM
Flash
Key Learning
OutIncode Calculator
Remote Keyless Entry
Car Audio
Injectors
VID
Powertrain
Airbag
Snapshots
Custom
Dump Tool
Test J1850 Adaptor
Full Scan
Open
Options
Exit


PCM Configuration
Binary
Parameters
00000000 57 46 30 35 58 58 57 50 44 35 35 50 30 31 32 32 WF05XXWPD55P0122
00000010 32 FF FF FF FF 2A FF FF FF FF 03 3D 0D A4 FF FE 2....*.....=....
00000020 78 41 FF FF FF FF FF FF 26 26 20 20 37 27 FF FF xA......&& 7'..
00000030 FF FF 64 0C 10 06 FF 27 04 32 FF FF C0 C2 11 43 ..d....'.2.....C
00000040 FF 00 00 00 00 00 00 BB 01 80 FF 02 02 18 FF FF ....
00000050 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ....
00000060 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ....
00000070 FF FF FF FF FF FF FF FF FF FF FF FF 68 9B FF FF ....h...
VID Read
VID Write
Load from File...
Save to File...
Ok.
Close

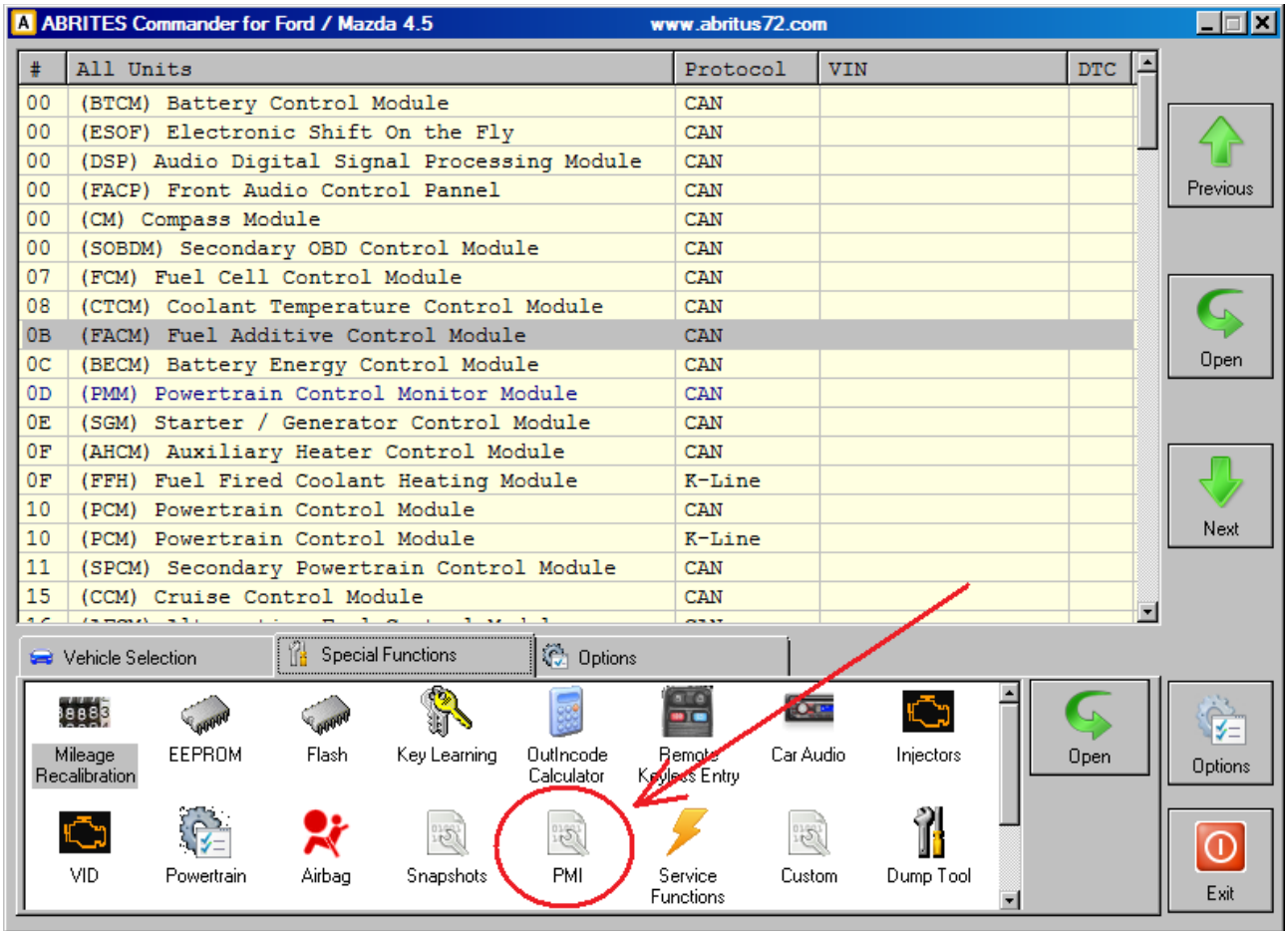

PCM Configuration
Binary
Parameters
Parameter
Value
VIN
WF05XXWPD55P01222
Tyre Size
829
Axle Ratio
3.492
Anti-Lock Brake System
Equipped
Auxiliary Cabin Heaters
Equipped
Cooling Pack
North Africa / Gulf Coast Countries
Air Conditioning
Equipped
Transmission
Manual
Body Type
Driveline
Front Wheel Drive
Speed Control
Generator
120 Amp
Vehicle Speed Output
Message from ABS via CAN
Vehicle Type
Focus
Fuel Type
Gasohol
Octane Of Fuel
91 RON
Octane Adjust / Spark Retard
Normal
Country
European
VID Read
VID Write
Load from File...
Save to File...
Ok.
Close

Central Car Configuration

Programmable Module Installation (PMI)

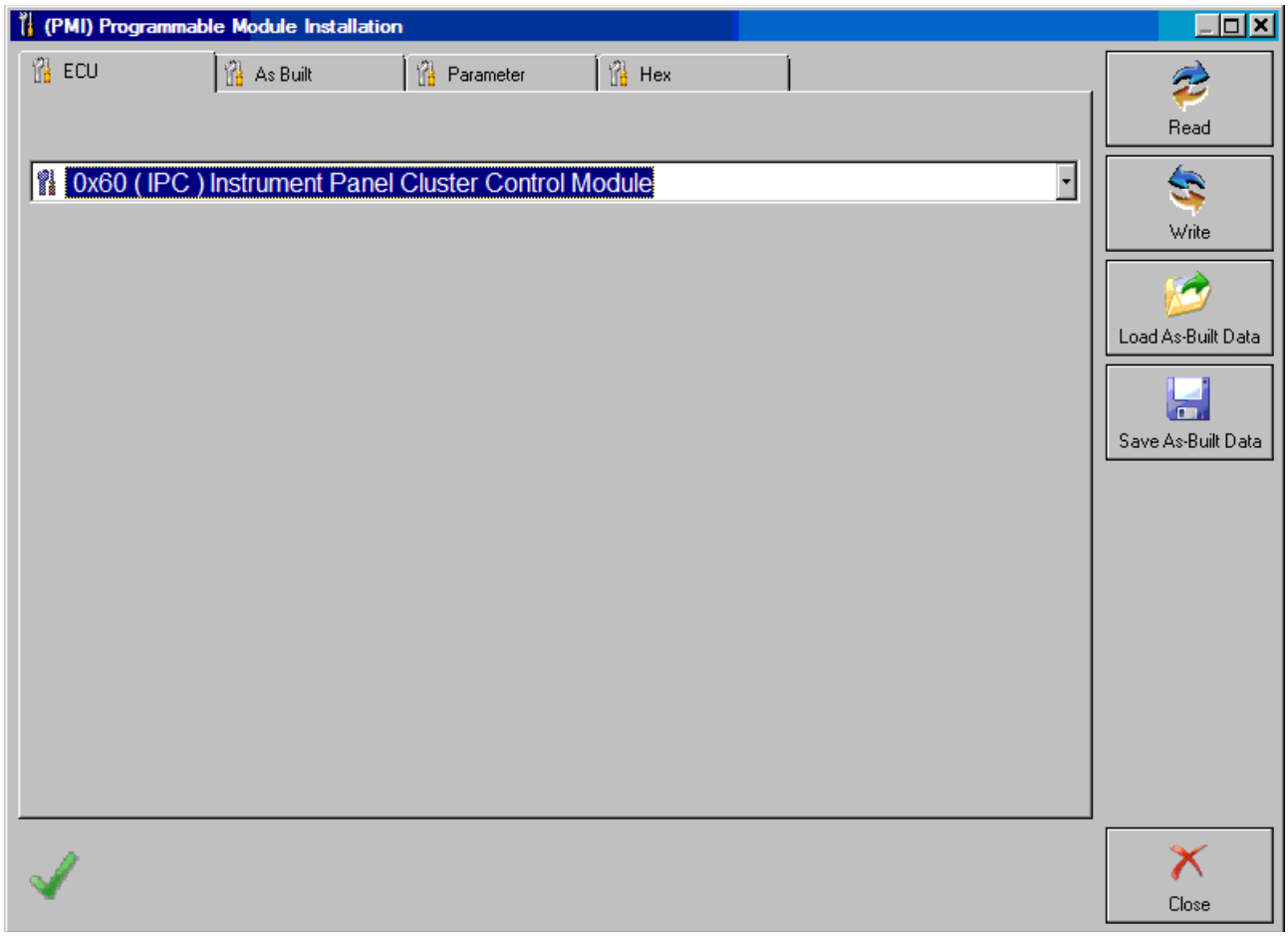
Step 1

Go to the Special Functions screen. Select PMI.



Step 2

Following Dialog Appears. Select ECU from combobox.



Step 3

If the original ECU is available, you can read PMI data.

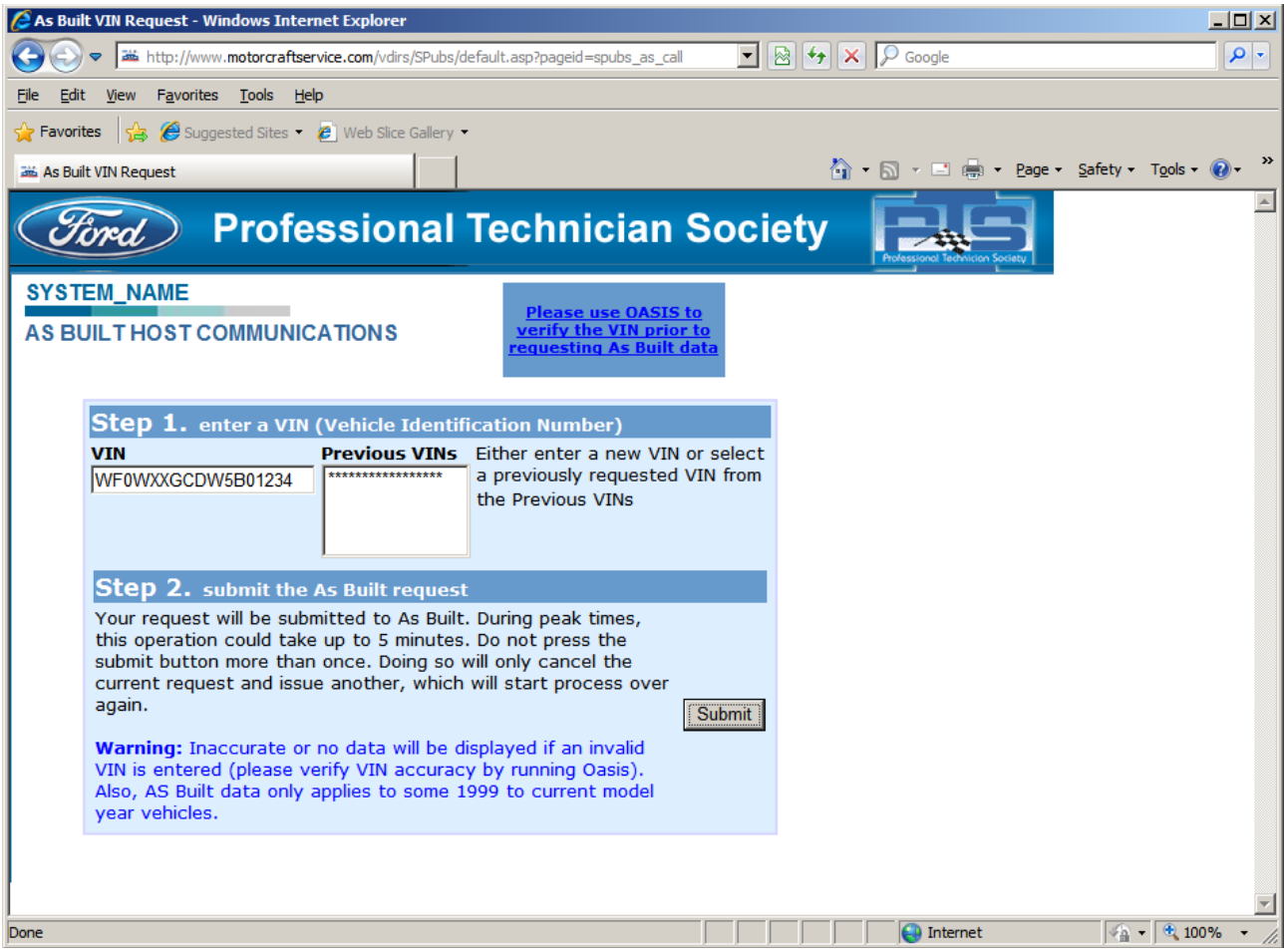
Use "Read" button.

Step 4

If the original ECU is not available, you can obtain vehicle PMI data from Motorcraft website.

Connect to internet and open online form Motorcraft website.

Enter the VIN in the box and press "Submit" button at the bottom.


As Built VIN Request - Windows Internet Explorer
http://www.motorcraftservice.com/vdirs/SPubs/default.asp?pageid=spubs_as_call
File Edit View Favorites Tools Help
Favorites Suggested Sites Web Slice Gallery
As Built VIN Request
Page Safety Tools
Professional Technician Society
SYSTEM_NAME
AS BUILT HOST COMMUNICATIONS
Please use OASIS to verify the VIN prior to requesting As Built data
Step 1. enter a VIN (Vehicle Identification Number)
VIN
WF0WXXGCDW5B01234
Previous VINs
Either enter a new VIN or select a previously requested VIN from the Previous VINs
Step 2. submit the As Built request
Your request will be submitted to As Built. During peak times, this operation could take up to 5 minutes. Do not press the submit button more than once. Doing so will only cancel the current request and issue another, which will start process over again.
Submit
Warning: Inaccurate or no data will be displayed if an invalid VIN is entered (please verify VIN accuracy by running Oasis). Also, AS Built data only applies to some 1999 to current model year vehicles.
Done
Internet
100%

Step 5

The "Module Reprogramming" page will open with the "VIN" and "Vehicle Data" at the top.

Below this are two columns, the one on the left is PCM data and the one on the right is BCE data.

Only programmable modules available in that vehicle will be listed under BCE Modules.

Some modules may have more than one line of data.

If a module is not listed, then it is not a programmable module.

Module Reprogramming

VIN: WF0WXXGCDW5B01234
Vehicle Data: 3735 FFFF FF69

click here if module data required is not available below.

PCM Module	
PCM 1	FFFF FFFF 0310
PCM 2	410D A4FF FF02
PCM 3	7841 FFFF FFC9
PCM 4	FFFF FF26 265D
PCM 5	2020 3727 FFB2
PCM 6	FFFF FFFF FF11
PCM 7	FFFF FFFF FF12
PCM 8	FFFF FFFF FF13
PCM 9	FFFF FFFF FF14

BCE Modules		TSB	SSM	Instructions
720-01-01	C0C0 1152 0C			
720-02-01	5757 5757 57DD			
720-03-01	5746 3057 58A7			
720-03-02	5847 4344 57A9			
720-03-03	3542 3031 3237			
720-03-04	3334 95			
726-01-01	640C 50FE ED			
726-02-01	2704 308B			
727-01-01	0203 083D			
730-01-01	5746 3057 58B5			
736-01-01	5746 3057 58BB			
741-01-01	5746 3057 58C6			
760-01-01	5746 3057 58E5			
760-01-02	5847 4344 57E7			
760-01-03	3542 3031 3275			
760-01-04	3334 D3			
760-02-01	006A			

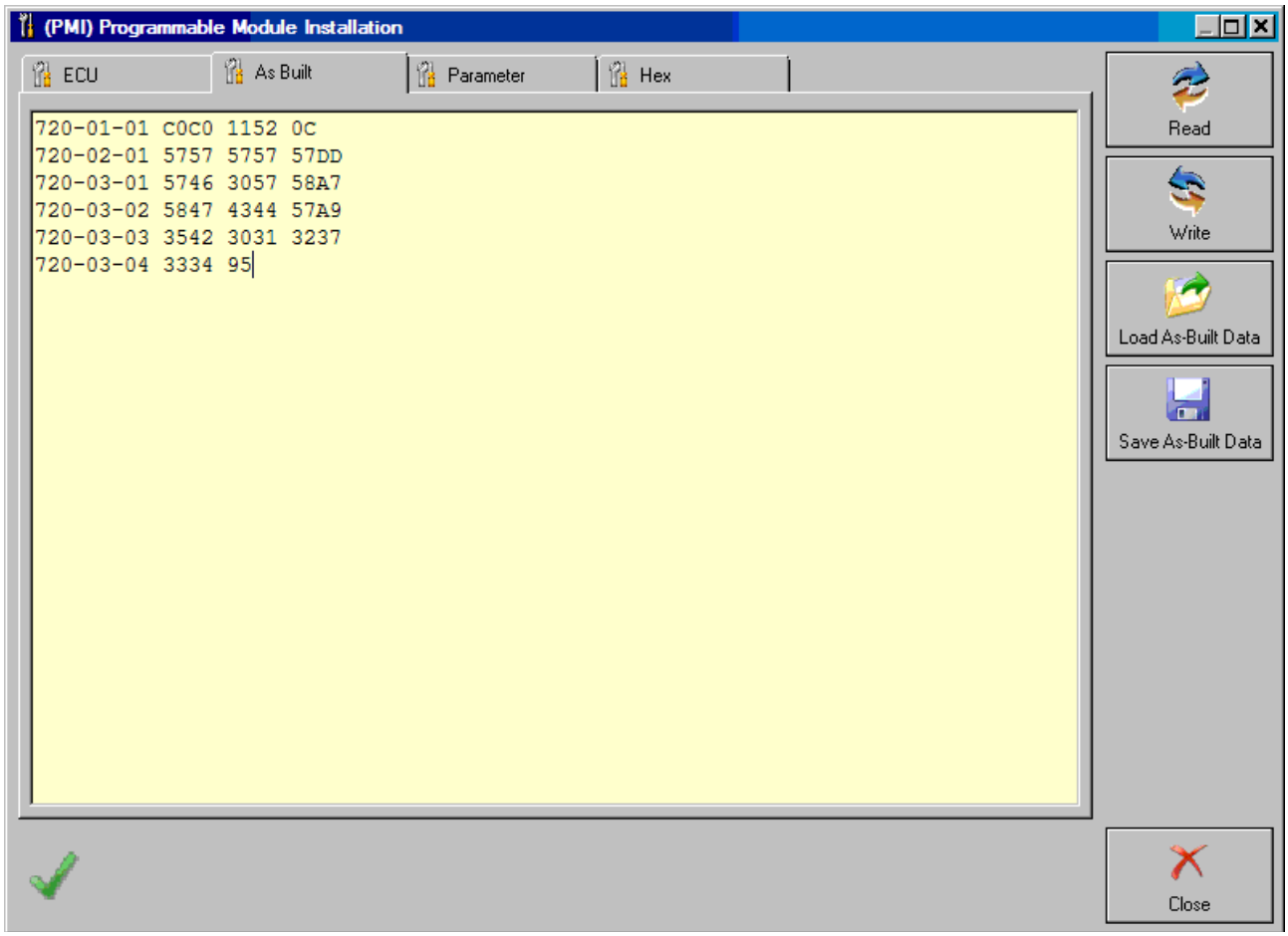
End of As Built information

Step 6

Find data for desired ECU by ID.

Enter As-Built vehicle data in commander.

Note that you must enter data without leading spaces, one entry per line.

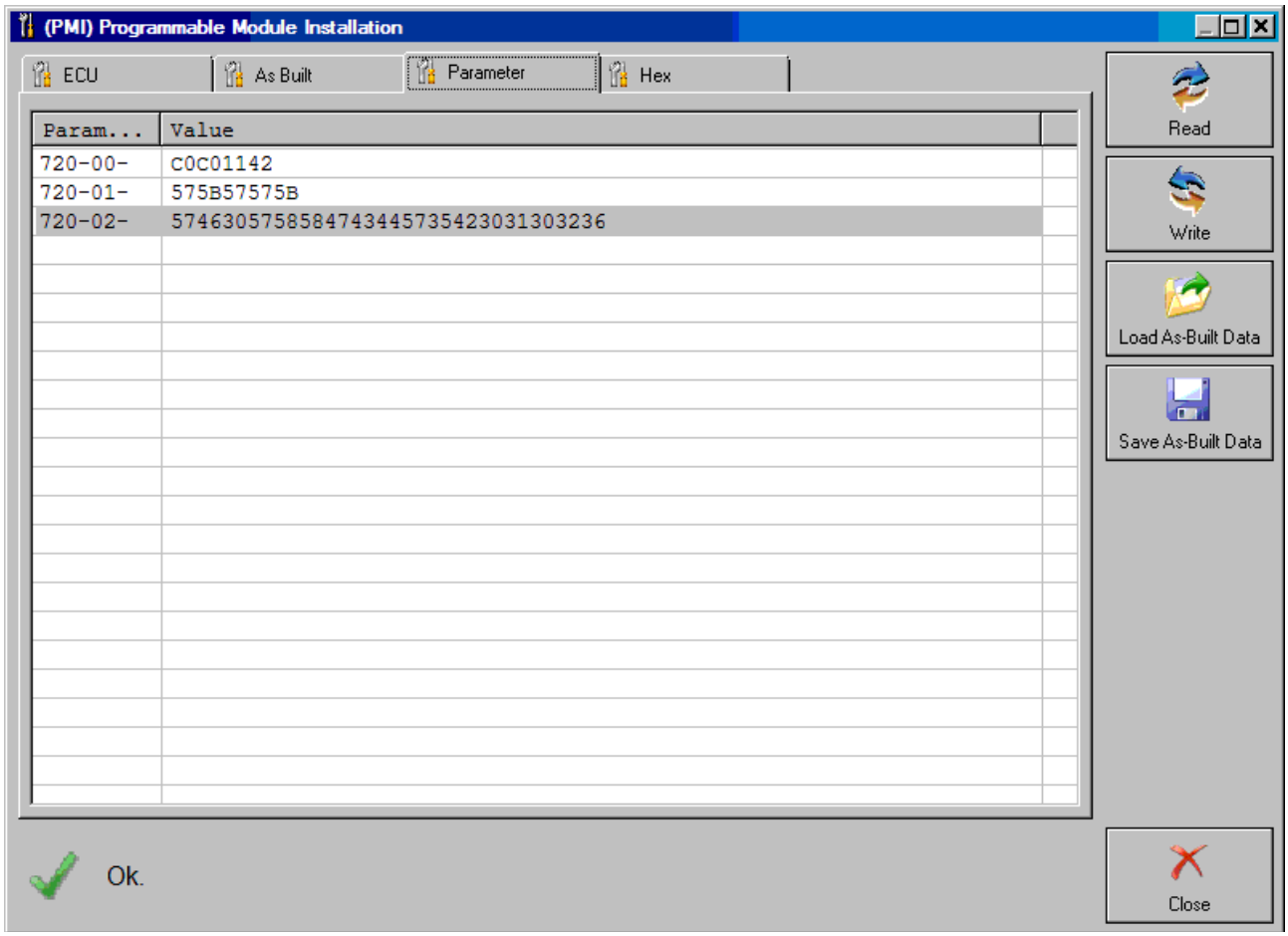


Step 7

Another view format.

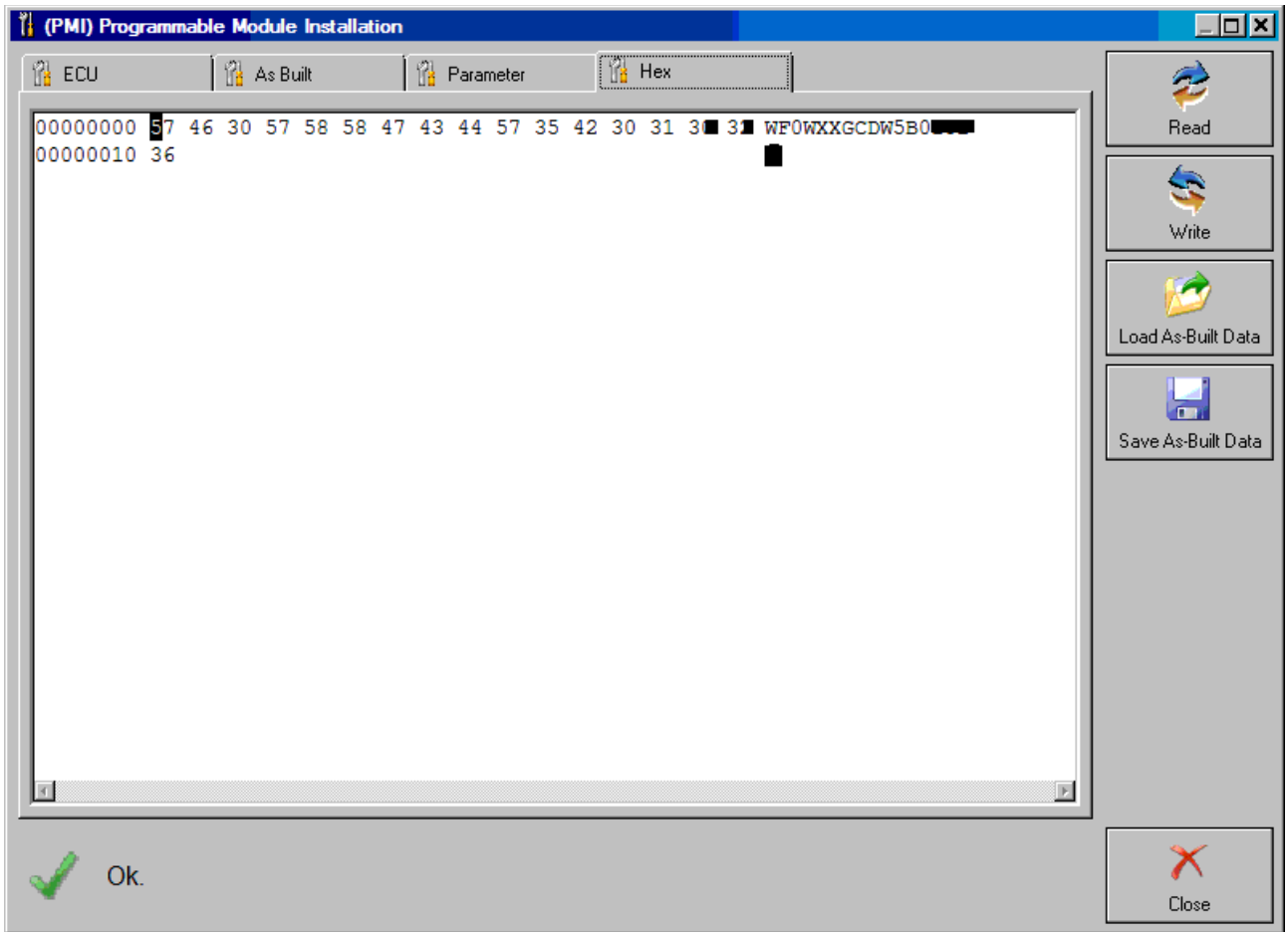
Here you can see whole PMI data block.

Double-click on data block to see and edit it in binary editor.



Step 8

If needed edit As Built data before writing.



Step 9

Turn Ignition OFF and properly connect new ECU.

Use "Write" button to enter data in newly installed ECU.

Step 10

During the write process, automatic backup of PMI data is performed.

If something going wrong, you can find backup PMI file in AVDI log folder.

PMI backup files have format "Backup_yyyymmdd_hh.mm.ss.pmi".

Use "Load" and "Write" buttons to restore data.

Fuel Injector Programming (TDCi Engines)

Fuel Injector Correction Factors

There are 3 common situations that demand this function.

- After Injector replacement.

- Fuel Injection system calibration

- Drivability problems like Lack of power, Black smoke and the presence of DTC's P2336, P2337, P2338 can often be fixed by re-entering the existing 4 injector codes

Note:

- On earlier model years (pre-2003) it is not possible to read the actual injector codes.

- It is important to check the codes carefully before entering them.

- After entering an injector code the fuel system will initially run without any pilot injector sequence. The car must be driven for a few kilometers.

Engine Type: Duratorq-Turbo Diesel Common Rail Injection

Capacity: 1.6L

Implement this service function if a new fuel injector has been installed.

Each injector has an individual 9 digit code called an injector correction factor.

This code applies individual compensation for each injector as a means of reducing the fuel delivery tolerance.

Perform this procedure to enter the required injector correction factor.

The injector correction factor is located on the head of the injector.

The injector correction factor is 8 digits long.

Ignore the last digit of the 9 digit code printed on the fuel injector.

Enter the injector correction factors in cylinder order.

To update or enter a new code, select the required injector and enter the relevant 8 digit code.

Enter all of the required codes, then press the return key displayed on the screen.

Engine Type: Duratorq-Turbo Diesel Common Rail Injection
Capacity: 1.8L

Capacity: 2.0L

The data required for each injector can be found on the injector body.
It consists of 16 characters - numbers and letters.
If you are certain that the original injectors are still fitted to the engine, you may find the data on a lebel on the engine.

Engine Type: Duratorq-Turbo Diesel Common Rail Injection
Capacity: 2.2L
Capacity: 2.4L
Capacity: 3.2L

Carry out this procedure if the Fuel Injector has been replaced:
Each injector has an individual 16 digit code called an injector correction factor.
This code applies individual compensation for each injector as a means of reducing the fuel delivery tolerance.
Perform this procedure to enter the required injector correction factor.
The injector correction factor is located on the injector body.
To update or enter a new code, select the required injector and enter the relevant 16 digit code.
Enter all of the required codes, then press the return key displayed on the screen.
If a label listing the injector code is still present (on top of the engine), remove it.
Information on the label is no longer correct and could mislead other service technicians
The Pilot Correction Learn procedure must now be performed

Engine Type: Duratorq-Turbo Diesel Common Rail Injection

Capacity: 2.2L

Perform this procedure if the following new component has been installed: Fuel Injector Each injector has an individual 6 digit code called an injector correction factor. This code applies individual compensation for each injector as a means of reducing the fuel delivery tolerance. Perform this procedure to enter the required injector correction factor. The injector correction factor is located on the injector body. Enter the injector correction factors in cylinder order. To update or enter a new code, select the required injector and enter the relevant code. Enter all of the required codes, then press the return key displayed on the screen.

Engine Type: Duratorq-Turbo Diesel Common Rail Injection StgV

Capacity: 2.0L

Perform this procedure if the following new component has been installed: Fuel Injector Each injector has an individual 20 digit code called an injector correction factor. This code applies individual compensation for each injector as a means of reducing the fuel delivery tolerance. Perform this procedure to enter the required injector correction factor. The injector correction factor is located on the injector body. Enter the injector correction factors in cylinder order. To update or enter a new code, select the required injector and enter the relevant code. Enter all of the required

codes, then press the return key displayed on the screen.

This function is required by service centres when an Injector needs to be replaced, or there is a driveability problem.

For 1.6 TDCi engines the each injector has an 8-digit calibration code stamped on the body.

For 1.8 , 2.0 , 2.2 and 2.4 TDCi engines the each injector has a 16-digit calibration code stamped on the body.

These codes relate to the electrical and structural characteristics of each injector, which are defined during production. The PCM must know the calibration codes for each injector in order to treat and operate the injectors in the correct manner. This helps to reduce emissions and improve performance. The code must be programmed in by communicating and downloading the code into the PCMs memory.

There are three common situations which demand this function.
1. After Injector replacement.
2. Fuel injection system ‘calibration’.
3. To cure drivability problems. Lack of power, black smoke and the presence of DTC’s:
P2336 - Cylinder 1 Above Knock Threshold
P2337 - Cylinder 2 Above Knock Threshold
P2338 - Cylinder 3 Above Knock Threshold
P2339 - Cylinder 4 Above Knock Threshold
can often be fixed by re-entering the existing 4 injector codes.

Fuel Injectors Programming is used on the following vehicles:

Model	**Engine**	**MY**	**.**
Fiesta	1.6 TDCi	2004 -	
Focus	1.8 TDCi	2001 - 2005	FFDA/F9DA/F9DB
Focus	2.0 TDCi	2001 - 2005	FIFA
Focus (new shape)	1.6 TDCi	2005 -	
Focus C-Max	1.6 TDCi	2005 -	
Mondeo	2.0 TDCi	2000 - 2006	HJBA/HJBB/HJBC/FMBA/N7BA
Mondeo	2.2 TDCi	2005 - 2006	
Transit	2.0 TDCi	2000 - 2005	
Transit	2.4 TDCi	2000 - 2005	H9FA
Transit Connect	1.8 TDCi	2002 - 2006	

NOTE:
• On earlier model years (approx pre-2003) it is not possible to read the actual injector codes. On these vehicles you will see ’00 00 00 00 00 00 00 00’ or ‘FF FF FF FF FF FF FF FF’ or a mixture.
• After entering an injector code the fuel system will initially run without any pilot injection sequence. The car must be driven for a few miles to correct this. The codes of the ORIGINAL injectors fitted to vehicle can be found on a label, which is fitted to the side of the engine or on the

engine rocker top (if it has not yet been removed).

The codes of the ORIGINAL injectors fitted to vehicle can be found on a label, which is fitted to the side of the engine or on the engine rocker top (if it has not yet been removed).

The codes on the label are in the following format:

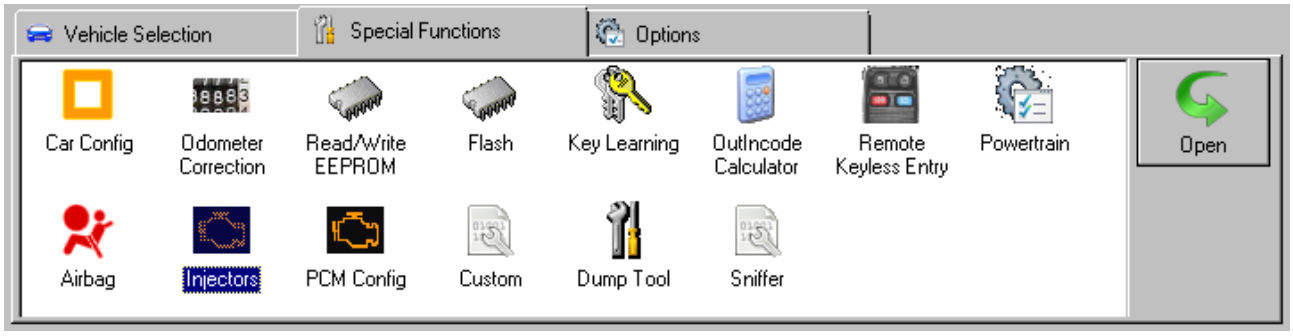
(1&2)	X1111111122222222X
(3&4)	X3333333344444444X

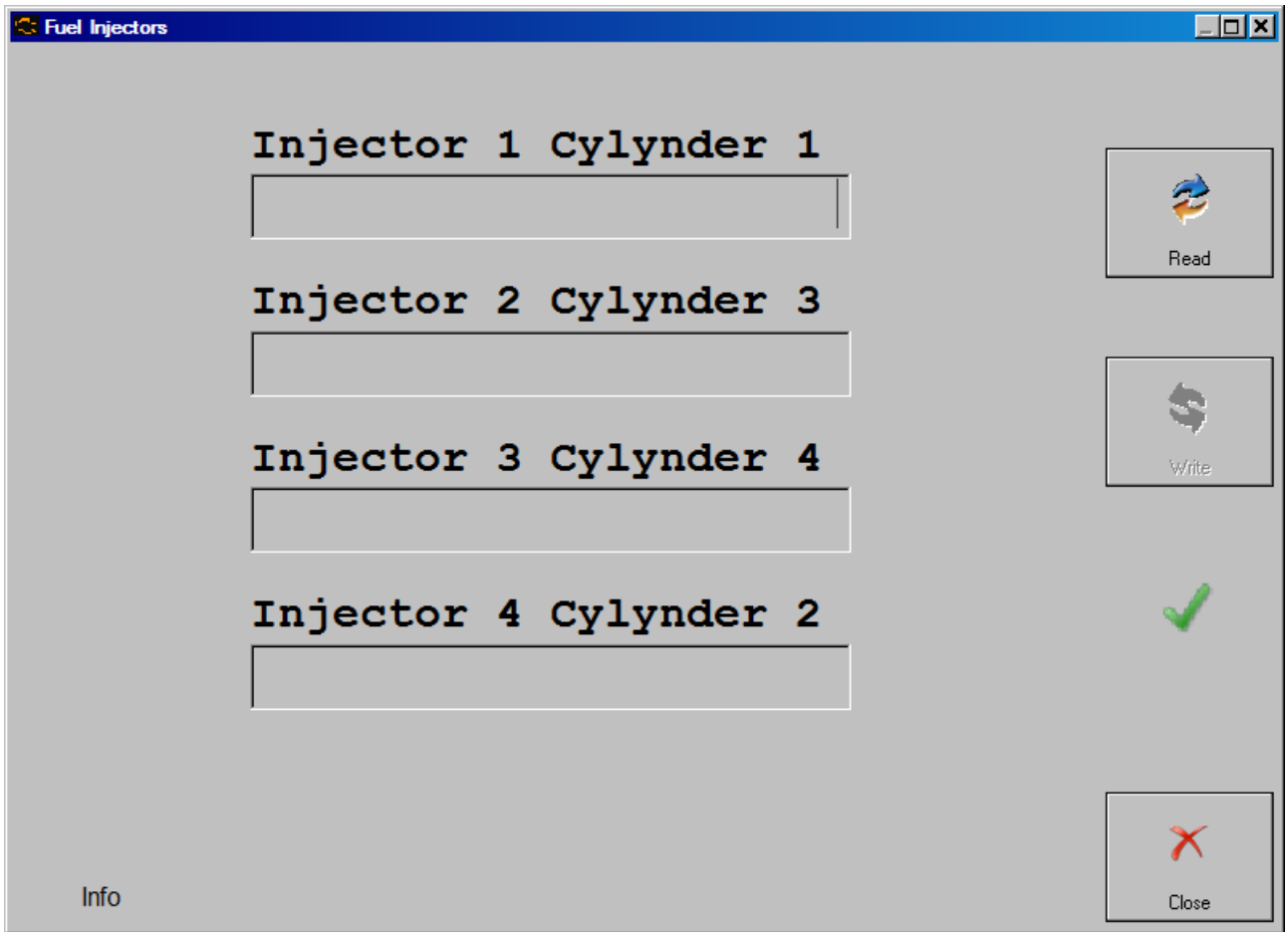
Where:
11111111 is the code for injector 1,
22222222 is the code for injector 2,
33333333 is the code for injector 3,
44444444 is the code for injector 4.
NOTE:
The injectors are in the physical order, NOT firing order.

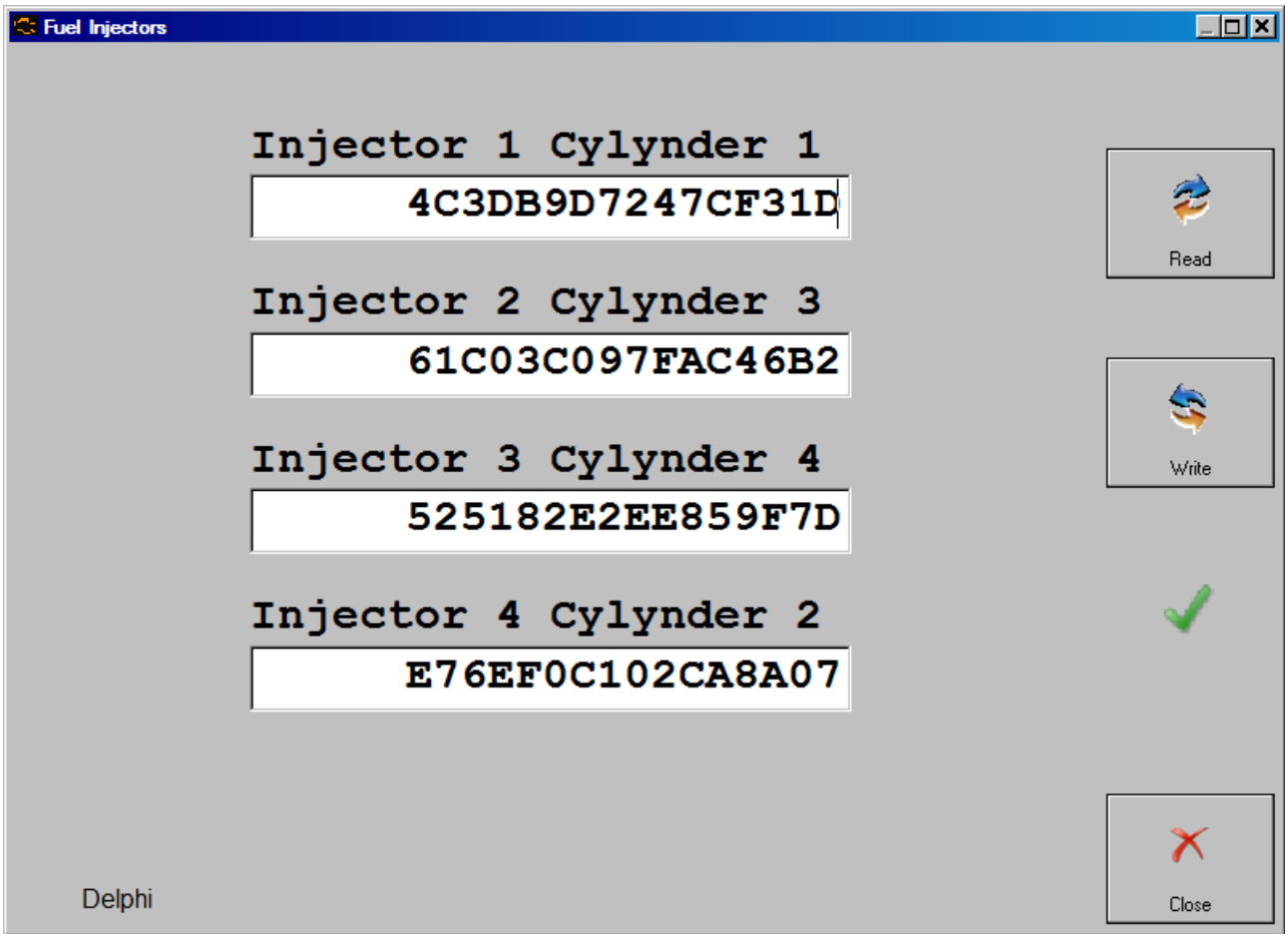
When replacing an Injector the code stamped on the body of the new Injector must be programmed into the PCM, NOT the code on the label.

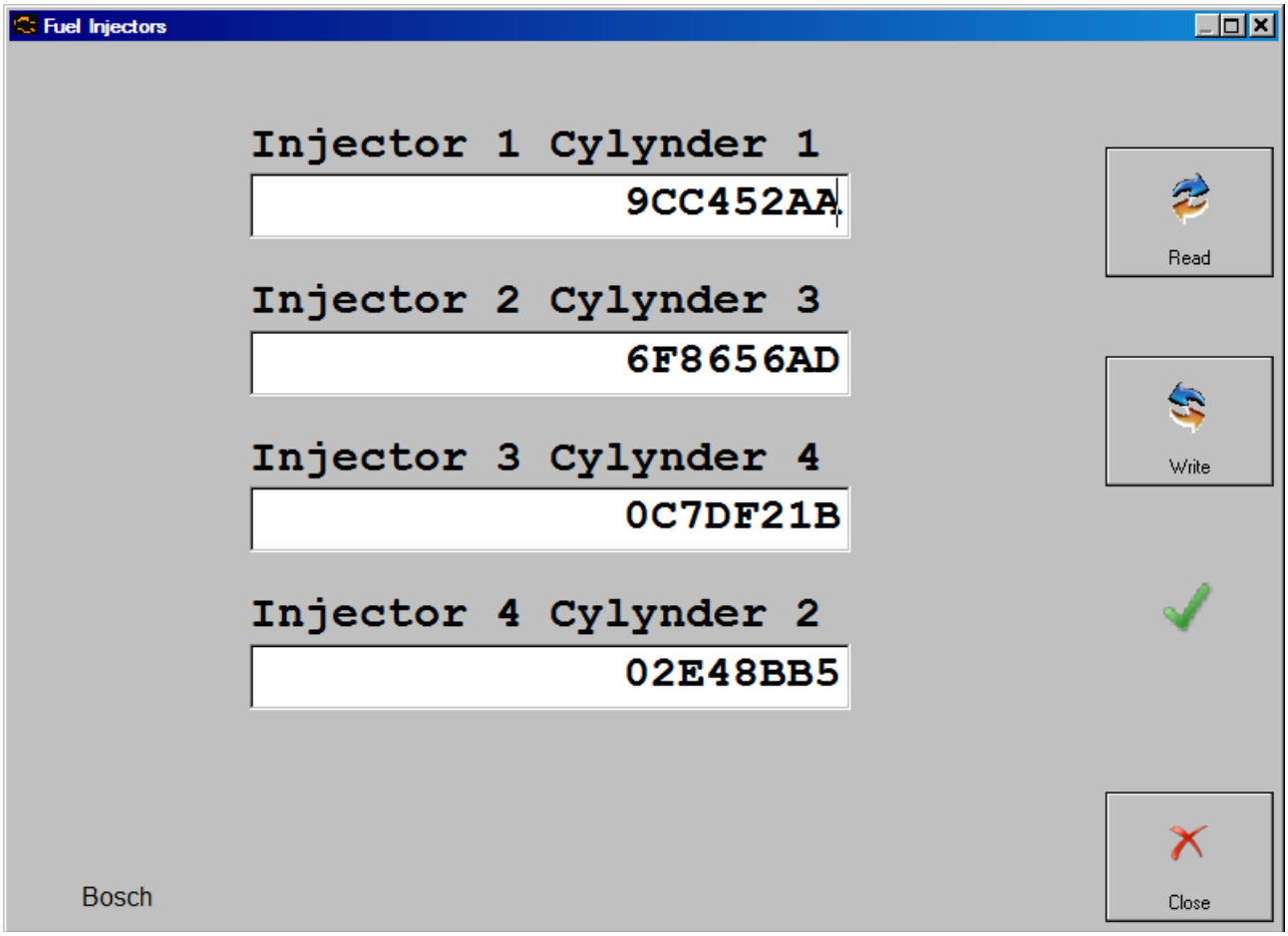
Duratorq-Turbo Diesel Common Rail Injection 2.4L Carry out this procedure if the following component has been replaced: Fuel Injector Each injector has an individual 16 digit code called an injector correction factor. This code applies individual compensation for each injector as a means of reducing the fuel delivery tolerance. Perform this procedure to enter the required injector correction factor. The injector correction factor is located on the injector body. To update or enter a new code, select the required injector and enter the relevant 16 digit code. Enter all of the required codes, then press the return key displayed on the screen.

WARNING:
Before attempting Injector Programming it is necessary for the vehicle to be left stationary with the Engine off for at least 8 hours. This is to ensure that the engine is stone cold before Injector Programming is performed. Failure to follow these instructions may result in failure of the Injector Programming function and/or drivability problems.




Fuel Injectors
Injector 1 Cylynder 1
Injector 2 Cylynder 3
Injector 3 Cylynder 4
Injector 4 Cylynder 2
Read
Write
Close
Info


Fuel Injectors
Injector 1 Cylynder 1
4C3DB9D7247CF31D
Injector 2 Cylynder 3
61C03C097FAC46B2
Injector 3 Cylynder 4
525182E2EE859F7D
Injector 4 Cylynder 2
E76EF0C102CA8A07
Read
Write
Close
Delphi

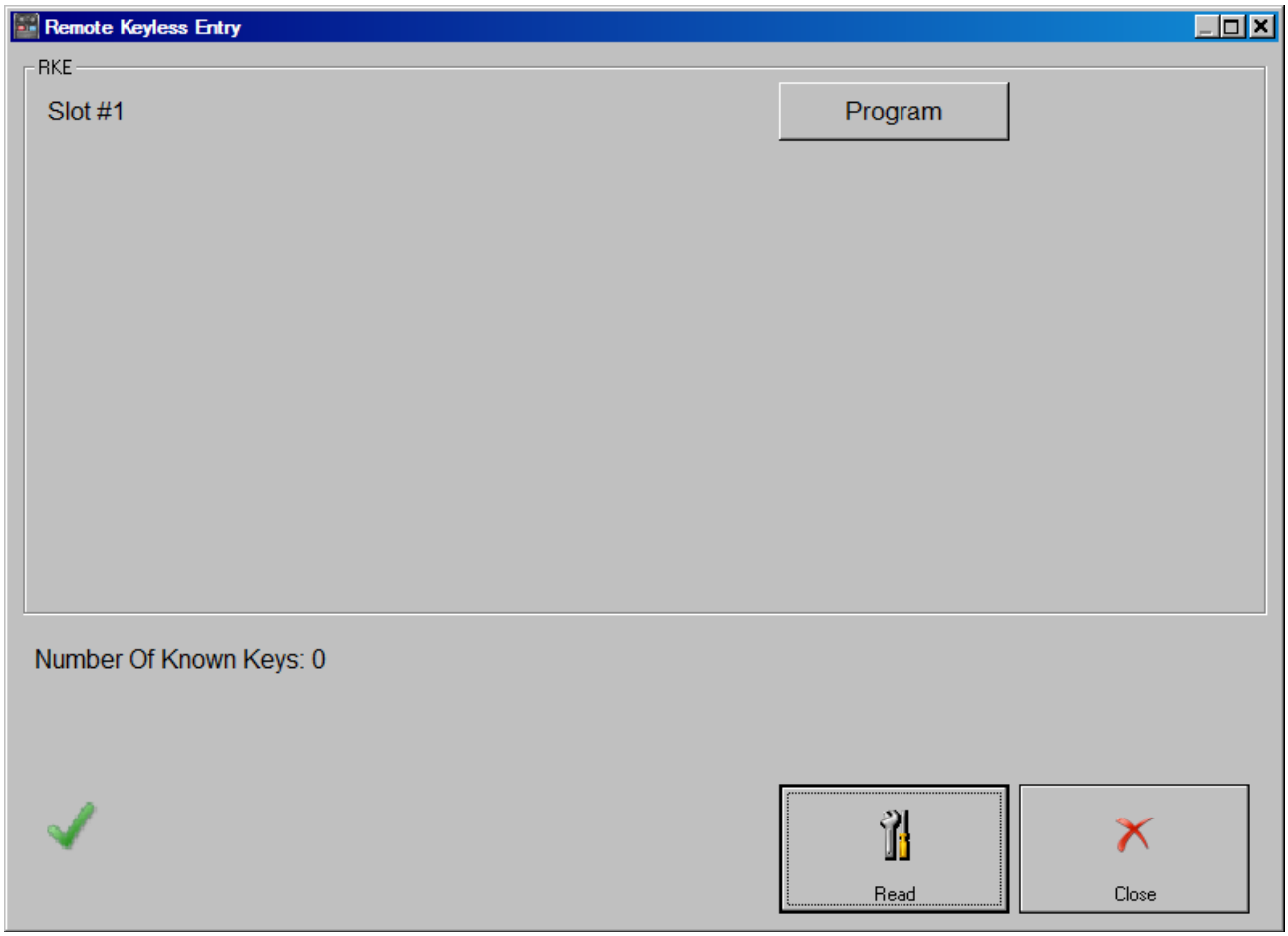

Fuel Injectors
Injector 1 Cylynder 1
9CC452AA
Injector 2 Cylynder 3
6F8656AD
Injector 3 Cylynder 4
0C7DF21B
Injector 4 Cylynder 2
02E48BB5
Read
Write
Close
Bosch

Remote Keyless Entry

Go to the Special Functions screen.

Select Remote Keyless Entry.

Following Dialog Appears



Turn ignition OFF and press button “Read” to get number of programmed smart keys.

Press button “Erase” to erase all of programmed smart keys.

Press button “Program” to program 1 smart key. You will be prompted to remove Key Cover and to place the key in emergency slot in the steering column shroud

All of smart key operations must be performed while ignition is OFF.

Manual reprogram a remote transmitter.

The following procedure has to be used to program the remote control key.
1.Turn ignition from OFF to RUN 4 times within 6 seconds with the 4-th time ending in OFF.
2.The system will chime to confirm programming mode entry.
3.Press any button on the first remote transmitter.
4.System will chime to confirm programming.
5.Repeat steps 2 and 4 for all subsequent remote transmitters.
6.Turn ignition to the RUN position to exit the programming mode.

Note:
- All keyfobs for the vehicle must be programmed at the same time. Any of the keyfobs which are not programmed during this procedure will no longer function.
- Up to 4 transmitters can be programmed.

Dump Tool

Dump Tool is an instrument for editing the content of the EEPROM files of specific electronic control units. You have to select a unit and load a dump file. Then when you click on the "Parameters..." button you will see a pop-up window with all available parameters related to the chosen unit. Typical parameters are odometer, security code and VIN. For the airbag units the option clear crash data is available. You can modify them by clicking on the parameter value. When complete with modifications click on the OK button. The dump data will be updated accordingly. All necessary check sums will be regenerated.

Service Functions

- ## Powertrain Control Module (PCM)

  - ### Reset Keep Alive Memory (KAM)

This procedure will reset the Learned Values stored in the Powertrain Control Module (PCM) such as idle and fuel.

  - ### Reset the Diesel Particulate Filter (DPF) Learned Values

This procedure must be carried out if a new diesel particulate filter is installed

The powertrain control module will continually learn the characteristics of certain components over time. There may be differences in the characteristics from the old and new components which will result in differences in the learned values. If a new component is installed the difference in learned values may result in poor driveability or set a diagnostic trouble code. This service function will reset the learned values of the old component. The learning process of the new component may occur immediately or over a number of drive cycles.

  - ### Reset the Water in Fuel (WIF) Warning Indicator

Execute this procedure only if water is detected in the fuel. After performing this procedure the WIF warning indicator is extinguished.

  - ### Reset the Knock Sensor Learned Values

Execute this procedure only if a full set of replacement injectors has been fitted.

The engine must not be running.

  - ### Reset the Fuel Metering Valve Learned Values

Execute this procedure if High Pressure Fuel Pump has been renewed.

The engine must not be running.

- ## Reset the Intake Air Throttle Valve Learned Values

Execute this procedure if Intake Air Throttle Valve has been installed.

- ## Reset the Exhaust Gas Recirculation (EGR) Valve Learned Values

Execute this service function if a new exhaust gas recirculation valve has been Installed.

- ## Reset the Differential Pressure Sensor Learned Values

This procedure will return the learned values back to the nominal settings.

- ## Reset the High Pressure Fuel System Learned Values

This service function must be performed if any new components associated with the high pressure fuel pressure system have been installed.

The powertrain control module will continually learn the characteristics of certain components over time. There may be differences in the characteristics from the old and new components which will result in differences in the learned values. If a new component is installed the difference in learned values may result in poor driveability or set a diagnostic trouble code. This service function will reset the learned values of the old component. The learning process of the new component may occur immediately or over a number of drive cycles.

- ## Fuel Injector Correction Factors

Execute this procedure if a Fuel Injector has been replaced.

- ## Relearn Vehicle Data

Execute this procedure to force a previously configured PCM to relearn new configuration data from BCM.

▪ Reset the Mass Air Flow (MAF) Sensor Learned Values

Execute this service function if a new mass air flow sensor has been installed.

▪ Reset the Fuel Pressure Relief Valve Open Count Learned Value

This procedure clears the counters that store the total number of times the fuel rail pressure relief valve has opened.

▪ Reset the Fuel Pressure Relief Valve Open Duration Learned Value

This procedure clears the counters that store the total time the fuel rail pressure relief valve has opened.

▪ Speed Limiter

This procedure sets maximum vehicle speed.

• Transmission Control Module (TCM)

• Body Control Module (BCM)

▪ Set Vehicle Power Mode

This application enables the setting of the vehicle power mode.

- ## Restraints Control Module (RCM)

  - ### Clear Restraint Control Module (RCM) Crash Data Memory

This routine will clear the crash data memory in the Restraints Control Module.

  - ### Restraints Control Module (RCM) Module Central Car Configuration (CCC) Update

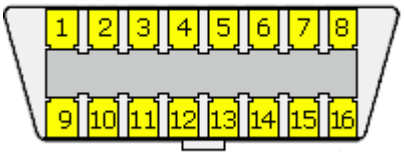
Carry out this procedure if RCM module has been replaced

  - ### Passenger Air Bag Deactivation (PAD) Switch Activation

The following procedure will activate/deactivate the passenger air bag switch.

Ford OBD-II diagnostic interface pinout and wiring

16 pin J1962 OBD-2 car proprietary connector at the Ford car.



Diagnostic interface for all model Ford vehicles.

Pin	Signal	Description
1		
2	J1850 PWM Bus+	
3	LS CAN High	Low speed (125Kb) CAN bus or UBP.
4	CGND	Chassis ground
5	SGND	Signal ground
6	HS CAN High	High speed (500 Kb) CAN bus.
7	K-LINE	(ISO 9141-2 and ISO/DIS 14230-4)
8		
9		
10	J1850 PWM Bus-	
11	LS CAN Low	Low speed (125Kb) CAN bus.
12		
13	FEPS	Flash EEPROM Program Signal. +18V
14	HS CAN Low	High speed (500 Kb) CAN bus.
15		
16	+12V	Battery power

Interfaces used:

1996 - 2004 : ISO 9141

1996 - 2007 : UBP

1996 - 2001 : J1850-PWM only

2002 - 2006 : J1850-PWM or CAN

after 2006 : CAN

Troubleshooting

Below you can find a list of typical problems and how to solve them:

Problem:

When starting the “ABRITES Commander for Ford/Mazda" a message box with the text "Connection Error: Interface not connected!" appear:

Solution:

- Be sure that the USB interface drivers are installed properly. You can look at the device manager, the USB interface should appear as “USB Serial Port (COMxx)” where “xx” is the number of the port.

- Try to reconnect the USB connector of the interface

- Try to reconnect the OBD2 connector of the interface

- Be sure that the interface is connected with the car properly

Abbreviations

CAN	Controller Area Network
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
ECU	Electronic Control Unit
IPC	Instrument Panel Cluster
TCM	Transmission Control Module
SLM	Shift Lever Module
TPMS	Tire Pressure Monitoring System
ACC	Adaptive Cruise Control
TC	Traction Control
ESP	Electronic Stability Program
EPS	Electro Power Steering
EHPS	Electro Hydraulic Power Steering
SAS	Steering Angle Sensor
SADS	Semi Active Damping System
CIM	Column Integrated Module
BCM	Body Control Module
PATS	Passive Anti Theft System.
DLC	Data Link Connector
PCM	Powertrain Control Module
KOEO	Key ON Engine OFF Test
KOER	Key ON Engine Running Test
RKE	Remote Keyless Entry

Contact Information

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